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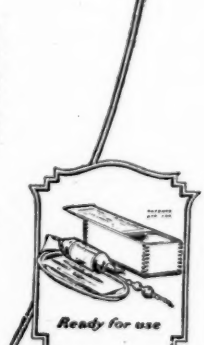

MINNESOTA MEDICINE

Journal of the Minnesota State Medical Association

VOL. V OCTOBER 1922 NO. 10

ORIGINAL ARTICLES

SOME OBSERVATIONS ON THE EARLY DIAGNOSIS OF TUBERCULOSIS*

F. M. POTTENGER, M.D.,
Monrovia, Calif.

Tuberculosis, until a comparatively short time ago, was considered a hopelessly incurable disease. One of the most potent factors in preventing progress at the present time is this overpowering pessimistic idea regarding the disease, which still lingers in the minds of both medical men and laymen. While medical men here and there throughout the world have been convinced of its curability for a long period of time, it is only within the last five or six decades that there has been any organized effort to give patients suffering from tuberculosis the same chance for life as is given to those suffering from other diseases.

Today, if we measure the curability of tuberculosis with that of other serious diseases, we must say that it is one of the most curable. I use the word "curable" advisedly, meaning clinical cure, i. e., a disappearance of clinical manifestations. If we are to estimate the manner in which this disease will yield to known methods of therapy, we must take as our measure the best work that is being done—not the poorest. Those who are most competent to treat this disease find that nearly all early stage cases, if treated under proper conditions and for a sufficient length of time, with a satisfactory co-operation, will yield a clinical healing. The statistics of the curability of this disease, however, are largely taken from reports of sanatoria, in which patients have been treated for an insufficient length of time, and in many cases under circumstances that were far from ideal. As a result such reports may show an arrestment or clinical healing of not more than ten, fifteen or twenty per cent in early cases. In fact, most of the statistics will be under fifty per cent. In making up these statistics, however, it should be understood that all patients remaining under treatment for a minimum of three months are counted. Such a method is a gross injustice to the cause of tuberculosis.

From my experience, I have no hesitancy in saying that ninety per cent of early cases of tuberculosis could secure a clinical healing. Regardless of this statement, institutions which are best prepared for the treatment of tuberculosis, and men who are most conversant with the application of the methods which have proven to be of value, are devoting most of their time and effort to the treatment of far advanced cases. Important reasons for this are: (1) a disbelief on the part of both laymen and physicians in general, in the curability of the disease; (2) a failure on the part of physicians to make early diagnoses, and an unwillingness on the part of patients to accept them when made; (3) when the diagnosis is made, a failure to secure for the patient the same intelligent, scientific treatment that would be secured were he suffering from some other disease; (4) a failure to appreciate the nature of the disease and the time element in its cure. It is perfectly evident that the blame for not securing better results lies about equally with the profession and the laymen.

In the Pottenger Sanatorium, during the last ten years, we have not failed to secure an arrestment in a single early stage case of tuberculosis, that remained under treatment for a minimum of six months. It must be distinctly understood, however, that six months is not the time that early cases of tuberculosis should be treated. They should be treated until a favorable result has been attained, or until it has been distinctly proven that it cannot be attained. In order to attain these results, some patients were treated for a period of about two years, and several others were treated from seven months to a year. The time element is the most important element in the treatment of tuberculosis—the time when the diagnosis is made; the time when the treatment is instituted, and the length of time that it is carried out. The amount of time that must be given to the treatment

*Read by invitation before the Consulting Medical Staff of the Lymanhurst School for Tuberculous Children, Minneapolis, April 8, 1922.

varies with the individual. Had we set any definite length of time for treatment, whether it were three months, six months, nine months, or a year, our statistics would have been lowered. Had we taken six months as the limit, we would have probably cut our statistics in half. It is interesting to know, however, that all of these patients, so far as I have been able to follow them, with two exceptions, have remained free from active disease since. Two relapsed and are again well, and have remained so for several years.

The important thing about these results is not that they have been attained, but the manner in which they have been attained. They have been attained because we have recognized that early tuberculosis is curable, but not curable regardless of conditions, nor in any stated time. It is just as reasonable for surgeons to report the results of operations after five, ten, or fifteen minutes' operation, as it is for those who are treating tuberculosis to base their statistics on three, six, or nine months' treatment.

While insisting that early tuberculosis is curable, I do not wish to leave the impression that advanced tuberculosis is incurable. Many advanced cases can secure a quiescence or an arrestment of the active process, and live lives of usefulness for many years, but the difficulties of obtaining such a result are infinitely greater and the danger surrounding the patient during his after-life are so many and so great, that the result is much less satisfactory and much less permanent. If all the patients who spend many months in trying to secure a healing when the disease has become far advanced, would put in half the amount of time and half the amount of money, during the early period of their disease, they would secure a far better and far more satisfactory result. Most patients who have had a severe advanced tuberculosis, even if they get the best result, are somewhat hampered and obliged to work at a lower state of efficiency than they would, had they received early treatment.

The physician should be competent to make an early diagnosis of tuberculosis, either himself or with the aid of some specialist. The patient should be willing to have such a diagnosis and anxious to co-operate in cure when it has been made. Too often a diagnosis of early tuberculosis is made and the patient goes from doctor to doctor until he finds it refuted. A negative diagnosis makes him happy for a time, but it is a happiness that too often proves shortlived and costly. Every man who has tuberculosis in the early stage should be delighted to have an early diagnosis made, because this gives him his best opportunity of having his efficiency restored.

The importance of early diagnosis must be impressed as firmly upon the minds of the laymen as upon the profession in general. Aside from the result obtained and the actual outlay for treatment, early diagnosis is demanded because of the difficulties which attend cure. Early tuberculosis, at best, will take the average man away from his business or profession for a period of from six months to a year. It takes a high degree of confidence on the part of the layman to be willing to accept such a program. Those who accept the diagnosis and work faithfuly for the healing are heroes; but how much better it is to accept the diagnosis when the disease is curable and when full efficiency may be restored, rather than wait until the outcome is questionable and the best result that can be attained is accompanied by a certain degree of reduced efficiency.

How is an early diagnosis to be made? As specialists we discuss the finer points of diagnosis. There is probably no diagnostic procedure in medicine that is more difficult than that of deciding whether or not in certain doubtful cases an active tuberculosis is present or absent. These, however, are problems for specialists rather than for general medical men. The general medical man, however, should understand the nature of tuberculosis, and should be able to make a probable diagnosis in nearly all instances. This he can do if he will only acquaint himself with the diagnostic knowledge that we possess today. The most important thing for the general man to do is to study his clinical history. A clinical history will give a fairly definite idea of the presence or absence of tuberculosis in practically all cases that are beyond the earliest stages, and in a very large per cent of those of the early type—probably eighty per cent or more. But this history must be taken carefully, and the symptoms weighed. We, as specialists, have taught so long that auscultation is the most important measure in physical examination and that we can rely mostly upon the proper interpretation of data obtained by this procedure, that it seems to be generally accepted that the same is

true for those who are not constantly practicing auscultation. But such is not the truth. I have seen many men make an early diagnosis of early tuberculosis on a clinical history, but when applying the stethoscope, and failing to find what seemed to them to be definite signs of tuberculosis, assume that their suspected diagnosis was wrong. If there were some definite sound which was always present when early active tuberculosis exists, the case would be different. But there is none. You may have roughness; you may have harshness; you may have diminished respiratory note; respiration may be prolonged, or it may not be; and all these signs may be found in a lung which is not the seat of early tuberculosis.. Râles may be present, or they may not be present. So, after all, the auscultatory findings are indefinite and must be interpreted in each case according to a certain amount of experience, and according to the conditions found.

Percussion, likewise, is a difficult thing and there are comparatively few men who are masters in its use. Men are too apt to think that the changes they find on auscultation and percussion are due to the disease that they are looking for, but such is not necessarily the case. We must take the lung as we find it, before tuberculosis exists in it, and then endeavor to find out the changes that are produced by the tuberculous process itself.

At this point, I want to say a few words regarding textbooks. Textbooks are not infallible. They should represent a good opinion on the subject discussed at the time they are written. All textbooks contain a large element of error. We are apt to consider those things which are accepted as facts, and resist all knowledge which differs from them. One's opinion is based on his accepted knowledge and experience. So it is but natural that opinions of different individuals should differ, at least in some particular, upon nearly all subjects. It is essential for examiners to learn the true value of existing medical teaching, and stand ready to alter it as necessary, in dealing with an individual case. Textbooks deal largely with ideal cases. Practice deals largely with exceptions.

If the first sign of tuberculosis were a roughened breathing, as is so generally taught, or a note accompanied by fine râles, do you suppose it would be the same if the patient had had a previous pleurisy, pneumonia, influenza, or bronchitis, which had left their pathologic changes in the lung? Manifestly not. You cannot give the same interpretation to data found in the chest which has been free from such diseases, as you do in the chest which has been affected by them.

I wish to insist that the most important thing in the diagnosis of tuberculosis is the careful analysis of the clinical history. In my work as a clinician, I have endeavored to simplify clinical history. I found I could do this best by having some definite idea as to the cause of the various symptoms. We can find some twenty-five, thirty, or more symptoms accompanying early tuberculosis. These symptoms differ greatly, manifest themselves in widely separated tissues, and should have varied degrees of importance attached to them; but if we come to examine them carefully, it is evident that there are only three factors operating to produce them—the toxins, reflex irritation, and the disease process as it manifests itself locally in the tissues. This has caused me to offer the following classification of the common symptoms of pulmonary tuberculosis:

ETIOLOGICAL CLASSIFICATION OF COMMON SYMPTOMS OF PULMONARY TUBERCULOSIS

Group I.

Symptoms Due to Toxemia

Caused by Harmful Stimulation of	*Symptoms*
I. Nervous System in General II. Endocrine System in General	1. Malaise 2. Lack of Endurance 3. Loss of Strength 4. Nerve Instability
III. Sympathetic Nervous System IV. Sympathicotrophic Endocrines. Particularly Adrenals and Thyroid	5. Diminished Digestive Activity 6. Increased Metabolic Rate 7. Loss of Weight 8. Increased Pulse Rate 9. Night Sweats 10. Temperature (partially)

Group II.

Symptoms Due to Reflex Cause

Hoarseness
Tickling in Larynx
Cough
Digestive Disturbances (Hypermotility and Hypersecretion)
Loss of Weight
Circulatory Disturbances
Chest and Shoulder Pains
Spasm of Muscles of Shoulder Girdle and Diaphragm
Flushing of Face

GROUP III.

SYMPTOMS AND SYNDROMES DUE TO THE PROCESS *per se*

Spitting of Blood
Sputum
Frequent and Protracted Colds (Tuberculous Bronchitis)
Pleurisy (Tuberculosis of the Pleura)

An examination of this grouping of symptoms, together with careful application of them in the clinic, will show that those of Group I, when caused by tuberculosis, are only present at the time that such process is clinically active. This group also may be present in any other infection; also in diseases of general nerve instability, and as a result of overwork and general conditions of exhaustion. So one must be very careful in making a diagnosis upon this group of symptoms alone.

Symptoms of Group II result from irritation that takes place through the inflammatory processes that occur in tuberculosus areas. Consequently they may be present as long as the inflammatory process remains in the lung. It is characteristic of these that they are all expressed in tissues other than the lung, but in tissues which are connected with the sensory nerves which come from the lung. A combination of some of the reflex symptoms with those of the toxic symptoms aids us in placing the inflammation in the lung itself.

Group III, which is made up of two symptoms and two syndromes, points more directly to the lung itself, but it can be readily seen that the syndromes representing tuberculous bronchitis and pleurisy, both contain symptoms belonging to Group I and Group II.

When one familiarizes himself with this classification of symptoms, he will see that there are only three factors operating to produce them: (1) general nerve and endocrine stimulation; (2) reflex irritation; (3) the local process as it exists in the lung tissue. While the third group contains the most important individual symptoms, yet by combining the various symptoms from the various groups, one can soon learn to differentiate active and quiescent clinical tuberculosis. In my own experience, I consider that this classification has given me far greater satisfaction than the old method of considering symptoms as constitutional and local.

An active tuberculous process should be suspected or eliminated by a careful study of the symptoms according to this classification, in at least 80 and probably 90 per cent of cases.

ACUTE APPENDICITIS*

ROBERT EARL, M.D., F.A.C.S.

I hesitate to bring before you for discussion a disease so common and well understood as acute appendicitis because even many laymen are sufficiently familiar with its symptoms to make a diagnosis in typical cases. The layman as well as the physician now recognizes the fact that the only safety lies in early diagnosis and early operation.

Although most cases of acute appendicitis are easily diagnosed, there will occur an occasional case where even the most experienced diagnosticians will have difficulty in making a differential diagnosis, especially during the early hours of an attack. Treves says, very truly, that almost all acute troubles within the abdomen begin with the same group of symptoms, and that until some hours have elapsed it is often impossible to say whether a violent abdominal crisis is due to the perforation of an appendix or other portion of the intestine, the bursting of a pyosalpinx, the strangulation of a loop of gut, the passage of a gallstone, the rupture of a hydatid cyst, an acute infection of the pancreas, the twisting of the pedicle of an ovarian tumor, or a sudden intraperitoneal hemorrhage.

In acute appendicitis, the first symptom is intermittent cramping or colicky pain in the epigastrium or around the umbilicus which continues about twenty-four hours. The spastic closure of the ileocecal valve is induced reflexly by the irritable and inflammed appendix, the pain being caused by the small intestine trying to force an opening through the ileocecal valve. If the activity of the small intestine is aggravated by laxatives, the pain will be increased and reverse peristalsis will cause the second symptom, which is nausea and vomiting. The vomiting usually occurs only once, but may occur two or three times. The third symptom to appear is general abdominal tenderness. The fourth is increased temperature from infection. The rise in temperature will occur in from two to twenty-four hours after the onset of pain. The fifth symptom is leukocytosis. The order of appearance of these symptoms is important. Dr. J. B. Murphy said, "If the nausea, vomit-

*Presented before the Ramsey County Medical Society, St. Paul, April 24, 1922.

ing or temperature precedes the pain, I feel certain the case is not one of appendicitis."

After twenty-four hours the pain, tenderness, and rigidity settles in the lower right quadrant at McBurney's point, and the pain changes from a colicky to a constant pain.

If the pus in the appendix (which is a condition of empyema) drains into the bowel, all symptoms, increased temperature, pulse, and leukocytosis, improve. If the appendix perforates, the pain will become diminished but the other symptoms will continue. As the appendix has no peritoneal coat along the mesenteric border, it usually perforates here because this point offers the least resistance. In gangrene the pains become less as time advances but the other symptoms progress. Exudates are thrown out around the area, this being one of nature's efforts to wall it off.

In acute appendicitis we must distinguish between true intestinal obstruction and physiological obstruction to the passage of gas and feces caused by nature's attempt to stop peristalsis and wall off the infected area. The sphincter ani muscle prevents the escape of gas, thus converting the large bowel into a cofferdam. The ileocecal valve becomes contracted reflexly, which causes distention of the small bowel. This distention confines the appendix to the right iliac region, in addition to which the omentum usually surrounds and further walls off the infected appendix. As soon as the pathological condition in the appendix has subsided, the reflex spasm of the sphincters will relax. and gas and feces will again pass.

If cathartics, water or food are given before the inflammatory process has subsided or become localized, they will start peristaltic action, thereby spreading the infection. The patient will probably get worse and may die because the cathartics given have prevented a localization of the inflammation.

If the patient lives from forty-eight to seventy-two hours, the lymphatics are blocked and adhesions, which localize the inflammatory process, are formed. These patients can now be operated safely and will recover in spite of the fact that an abscess has developed with considerable sloughing of tissues.

As a rule in the acute attacks there is a leukocytosis of 12,000 to 25,000. Usually the degree is the expression of the peritoneal irritation. The higher the percentage of polymorphonuclears the more virulent the infection. A high count may mean a vigorous reaction to the infection; a low count may mean either a poor reaction and hence an unfavorable condition of the patient, or it may indicate a very mild degree of infection with a normal reactivity of the patient.

Appendicitis starting with a chill indicates gangrene of either the mucous membrane or the outer layers of the appendix. A chill followed by fever indicates infection. A chill not followed by fever indicates a nervous chill.

Fever is always present in the early stages, even in the mildest forms, and is a most important feature. Some surgeons will not operate on a case in which they are confident that no fever had been present in the first thirty-six hours of the disease.

Pain over the region of the appendix without gastric symptoms is usually not due to appendicitis but to salpingitis, oophoritis, or some one of a large number of diseased conditions referring pain to this region. Of referred pain, that of pleurisy especially in children is a frequent cause. The referred pain in pleurisy is relieved when the patient pauses in breathing; the surgeon's palpating hand can be pressed into the abdomen, without causing pain or tenderness, between each breath and when breathing is stopped. These patients will not be relieved of their pain unless the real cause of the pain is removed, in addition to the removal of the appendix.

A child's appendix is large at the top like a funnel. An adult's appendix is smaller at its junction with the cecum. Therefore, an adult's appendix does not drain as readily as a child's appendix and is more prone to form an empyema. The submucous coat of a child's appendix is very delicate and poorly developed until after the twelfth year. A child's appendix will therefore perforate much more quickly than an adult's, for which reason the symptoms of perforation will be early symptoms of appendicitis in children.

As some attacks of appendicitis progress much more rapidly than others, it is impossible to judge the extent of spread of the infection as measured by hours or days. Physical examination should be our guide instead of the element of time. It is true that a case seen within twenty-four hours would, in most instances, be an early case, but this is not always so, as we sometimes find signs of severe infection with pus about the appendix within the

first twenty-four hours after the onset of symptoms. On the other hand, the disease may remain in the first stage for a considerable time, in which event the early operation can be done after several days without danger.

The physical signs which would lead us to conclude that the patient is still in the first stage of his attack are: (1) the upper abdomen and left side are still soft and not tender; (2) there is no pain in the lumbar regions, at least not in the left; and (3) the pressure pain and localized reflex contractions are limited to the region of McBurney's point without any extensive dullness or definite resistance.

When a patient is seen with the history of an attack of acute appendicitis, and the above physical findings are present, it is our duty to urge immediate operation, thereby securing the lowest possible mortality, which is well illustrated by the following statistics given out by De Quervain: 1,723 cases operated upon on the first day of illness with mortality of 0.69 per cent; 1,389 cases on the second day, 4.7 per cent; 788 cases on the third day, 10.7 per cent; 197 cases on the fourth and following days, 21.2 per cent; giving a total of 5,097 cases with an average mortality of 8.1 per cent. In the last two groups the patients reached the surgeon much too late, and doubtless some in the second group could have been diagnosed earlier than they were. At any rate, there should be no third and fourth days of appendicitis, so at the least calculation, 1,985 out of 5,097 cases were late or mishandled cases.

It may be stated that in cases of acute appendicitis which have been permitted to progress to the stage of abscess formation or the development of complications, someone has procrastinated to the point of mismanagement. When the mortality in acute appendicitis operated during the first twenty-four hours is less than 1 per cent, it behooves us to educate the public to the necessity of calling a physician who may diagnose the case and have it operated early in order that the mortality may be kept low.

After the patient has passed the first stage and the process has not become localized, we will find the abdomen everywhere sensitive to light percussion, pressure in the lumbar regions will cause pain, palpation will produce extensive reflex muscular contraction. With these findings it is quite certain that there is considerable involvement of the peritoneum.

When we see a patient on the third or fourth day with the inflamed area undergoing incapsulation or already subsiding, with an area of muscular rigidity, possibly mass formation, tenderness to pressure, dullness on percussion or tympany from an overlying distended bowel (the rest of the abdomen being soft and but slightly distended and not sensitive to pressure), the process will in all probability be a localized one progressing toward abscess formation, in which case we should pursue a course of watchful waiting lest we disturb the defenses that nature has built up. If the general and local symptoms show no signs of subsiding, and especially if they increase, an operation is indicated for the purpose of evacuating the pus and removing the appendix if this can be easily accomplished without much manipulation. If a secondary collection of pus forms within the second or third week, this should be evacuated. The formation of a secondary abscess is indicated by the fact that improvement stops short, the temperature rises again and takes the form of an abscess chart. In such a case it is probable that residual abscesses are forming. Experience teaches us that there are several points at which these abscesses are most likely to form. First in frequency is Douglas' pouch, where an abscess can at once be recognized by a rectal examination, when we find a protrusion and edema of the mucous membrane, with mucous discharge from the rectum and tenesmus. An abscess in the flank is recognized by localized pain on pressure, muscular rigidity and dullness. After the third week, a subphrenic abscess is the most likely complication.

When physical examination fails to reveal anything abnormal in these locations and the symptoms still persist, it is probable that small abscesses exist between the coils of the intestines; in this case it is best to await their spontaneous absorption, as searching for an abscess in this locality may do more harm than good.

A generalized peritonitis may be caused by a severe initial septic infection of the whole peritoneum. This is usually due to an extensive perforation which has flooded the peritoneal cavity with septic material, or to an acute gangrene of the appendix. In generalized peritonitis the patient looks very sick, has a rapid threadlike pulse, has

a normal or subnormal temperature in the extremities and in the axilla, but a high rectal temperature, with dry tongue and persistence of vomiting. If these symptoms appear suddenly after the patient has been sick a few days, it would probably mean that an abscess, which was originally localized, has ruptured into the general peritoneal cavity.

In acute appendicitis with general peritonitis the prognosis depends more upon the virulence of the micro-organisms than upon the extent of the peritoneal involvement. We have all seen cases in which the temperature and pulse were good, the reflex muscular contractions were slight, there being no intestinal paralysis or vomiting, but in which the intestines will be floating in pus when the abdomen is opened. In these cases the peritonitis is not as widespread as it appears and there is slight virulence of the pus organisms; in children, for instance, pneumococcic peritonitis is comparatively harmless, while in other cases the peritoneal sepsis has terminated fatally before any anatomical changes in the peritoneum have had time to occur.

The differentiation of these various pathological processes is of importance. If we have allowed the opportunity of an early operation to slip by, and the case is in the stage of early exudation of a mild character, we may await the localization of the process; but if a diagnosis of diffuse septic peritonitis has been made, the abdomen must be opened preferably at several places and thoroughly drained. If the appendix is free, it should be removed at the same time.

The peritoneum, if spread out, would cover the entire body surface. There is as much peritoneum as skin. The peritoneum, if unhindered, can absorb from three to eight per cent of the body weight in one hour, being equivalent to the entire body weight in twenty-four hours. There is normally a movement along the peritoneum toward the diaphragm. A pigment in a normal peritoneum will travel from the pelvis to the diaphragm in about twenty minutes. The peritoneum in the region of the diaphragm has the greatest power of absorption. The omentum comes second. The peritoneum in the region of the appendix, third. The parietal peritoneum is fourth. The pelvic peritoneum comes last with practically no absorptive ability.

Death in pelvic peritonitis is from pelvic cellulitis and not from peritonitis. The cause of death from peritonitis is due to: (1) toxemia through absorption from the peritoneum; (2) obstruction from paralysis of the bowel causing absorption of intestinal toxins; (3) secondary complications, as ileus, etc.

If the spread of infection on the peritoneum is not too rapid, the system will wall off and isolate the inflamed area. Localized peritonitis is seldom a cause of death.

The cause of travel of septic material from the pelvis toward the diaphragm is probably the pump-like action of the diaphragm, causing positive and negative pressure which sucks the infection upward, thereby spreading it over the peritoneum. To prevent this, nature causes more or less of a fixation of the diaphragm during an attack of peritonitis. The peristaltic action of the intestines will carry the infection around in the peritoneal cavity. Nature, therefore, causes a paralysis of the bowel for the purpose of limiting and localizing the infection. Bodily movements also tend to spread peritoneal infection.

Based on the above facts, the treatment of peritonitis should include the taking of nothing by mouth—not even water—for the purpose of preventing peristalsis. In an attack of peritonitis nature empties the stomach by vomiting. If the irritation is more extensive, the duodenum is next emptied. In this way, nature shows that it does not want anything to stimulate peristalsis. A glass of water before breakfast starts peristalsis, and a bowel movement is encouraged, for which reason no water should be given by mouth until the peritonitis has become localized.

The patient should be placed in Fowler's position for the purpose of diminishing the absorption of toxins by favoring the gravity movement of the toxic products in the peritoneal cavity from the diaphragmatic area with its highest rate of absorbability to the pelvic area with its lowest rate of absorbability. The patient should also be turned toward the side in which the drain is placed. Some surgeons claim very good results from placing the patient in bed on his face for the purpose of facilitating drainage by getting the wound at the lowest point of the peritoneal cavity.

The patients should all have proctoclysis by Murphy's method, which furnishes fluid to the body and diminishes the rate of absorption of toxins from the peritoneal cavity. If the blood vessels are well filled and distended they do not

need so much fluid and will therefore absorb less fluid from the peritoneum. If we give normal saline solution by rectum, the patient will become overloaded with salt, which will have a deleterious effect on the kidneys and cause edema of the body and great thirst. We do not drink salt water normally. Patients will absorb more plain water than normal saline. Such a patient is liable to develop acidosis. Therefore, we should add glucose to the tap water to make a 10 per cent solution, which will add many calories per day to the patient's nourishment. As a further means of preventing acidosis, sodium bicarbonate should also be added to the tap water in similar amount.

Many nurses do not use the proper technique in giving the Murphy drip. The surgeon must, therefore, watch the giving of the proctocylsis until each new nurse has been thoroughly trained. The supply container should be at the end of the bed and the tube must come up between the patient's limbs. A bent hard rubber or glass tube with a bulb on the end is much less liable to be expelled than the ordinary rubber tube or catheter which has no bulb to rest against the inner edge of the sphincter ani. It is well to bend this tube to an angle of 35 degrees so that it will not impinge on the rectal mucous membrane, causing a desire to stool. A hot water bag, covered with towels, should be placed under the tube. This will also help to elevate the tube before it enters the rectum. There must be a "Y" on the tube with a bypass to the top of the can, which will permit the escape of gas and allow the backing up of fluid through the tube into the container without causing expulsion of the rectal tube. The can should be elevated four feet. The water in the container must be kept warm by any one of several well known methods.

Proctoclysis should not be used in unlocalized septic peritonitis during the first twenty-four hours as it causes peristalsis, which tends to spread infection and hinder localization. Therefore, the body fluids much be compensated, toxins eliminated and thirst alleviated in some other way. Our only other method of giving fluid during the period of localization of the peritonitis is by hypodermoclysis. A patient should be given at least 1,000 c.c. of water every twenty-four hours. Hypodermoclysis is best given by the method described by Bartlett in his book on "After-Treatment of Surgical Patients," which, in brief, consists of instilling freshly distilled sterile water through a regular hypodermic needle (No. 18) three inches long attached to a rubber tube one-half inch in diameter and four feet long, using a visible dropper and clamp, the same as is used in proctoclysis. The water is heated to between 100 and 110 degrees and poured into the warm container, which is attached to an adjustable pole. The needle is first thrust through a square fold of gauze six ply thick before being introduced under the skin. This prevents the hand touching the needle or skin which has been previously cleansed with iodine or alcohol. After the fluid has been allowed to fill the tube and needle so all air is expelled, the needle is plunged up to its flange in the subcutaneous tissue near the outer border of the pectoral muscles midway between the nipple and the head of the humerus. By this method the fluid spreads into the subcutaneous tissue of both the axillæ and breast and is absorbed much more rapidly than when given under the breast alone. The needle is held in position by a strip of adhesive over the sterile gauze.

Lavage must be used often enough to keep the stomach empty of secretions and regurgitated toxic substances, thus preventing their absorption, gastric dilatation and peristalsis.

Morphine should be given regularly, as it will paralyze the intestine for four hours, reduce respiration, prevent absorption, minimize the spread of infection, relieve pain, restlessness and sleeplessness.

If intestinal obstruction develops, the best treatment will consist of making a left rectus incision under local anesthesia, pick up a loop of jejunum which is heavy and full of toxic fluid, put in a tube with two purse string sutures and drop the jejunum back without any further disturbance. Do not hunt for the point of obstruction. If the patient is vomiting, a free flow of toxic material is obtained. If the ileum is opened further down we will get mostly gas with very little fluid drainage. After the tube has been introduced into the jejunum keep on washing the stomach and give plenty of fluids.

No food should be allowed by mouth until the symptoms have subsided to such an extent that the patient has tolerated small amounts of water by mouth for twenty-four hours without causing pain or vomiting. When feeding is started, carbohydrate fluids should be given first because they com-

bat the acidosis brought on by the combined infection and starvation.

After an attack of acute appendicitis, in which the appendix was not removed, an interval of six months should elapse before the appendix is removed. By this time the adhesions will, to a large extent, have been absorbed so the operation can be performed with much greater ease and safety than if performed earlier.

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CONDITIONS SIMULATING AN ACUTE LEUKEMIA* (ACUTE BENIGN LEUKEMIA)

JOHN GROSVENOR CROSS, M.S., M.D.
Minneapolis, Minn.

The title of this paper is not intended to mislead. There is no such thing as benign leukemia. The correct title should be "Conditions Simulating An Acute Benign Leukemia."

In 1913, R. C. Cabot[1] commented upon the occurrence of lymphocytosis in mild infections. He looked upon it as an unexplained substitution of lymphocytosis for the more usual polymorphonuclear leukocytosis.

In 1915, Hall[2] reported to the Royal Society of Medicine a case resembling acute lymphatic leukemia with recovery, in a young adult.

In 1920, Sprunt and Evans[3] described six similar cases.

Sprunt and Evans' cases were all young adults between 23 and 29. All had symptoms of a mild infection for from a few days to three weeks before the first examination, with soreness in the head, neck and shoulders. The course of the fever ran from 4 to 10 days, after which there was a gradual recovery from symptoms and a return of the blood to normal. The lymphocyte percentages during the height of the attack were sometimes as great as in acute leukemia, the total number of white cells being never over 20,000. There was, however, a noticeable absence of fragility and of degeneration forms.

It was of interest to hear Professor Daland say last evening that 50 per cent of focal infections show a lymphocytosis, and that such a blood finding is of considerable value as indicating the probability of a concealed process.

In March, 1921, Bloedorn and Houghton[4] reported three cases, all evidently of the same type, with recovery. They proposed the name "Acute Benign Lymphoblastosis," as covering the essential features of the disease, because of the peculiar blood picture which is common to all of these cases. Someone else has suggested that the disease be called "Infective Mononucleosis."

Three cases of the same sort have come under our observation, or that of colleagues, who have given us the privilege of studying them. Undoubtedly many more have not been reported.

The striking features of the clinical condition are these:

1. An acute febrile disease, usually with a local infectious, but non-suppurative process.
2. Enlargement of lymphatic glands of the neck, axillæ or groins, or combination of these, and enlargement of the spleen.
3. A relative increase in the mononuclear white cells, either with or without a moderate leucocytosis, less than 20,000 usually.
4. The occurrence of certain white blood cells difficult to classify, but which are generally assigned as lymphoblasts.
5. Recovery.

In all the cases reported, the similarity of the blood picture to that of acute lymphatic leukemia was noticed. In fact, it is this possibility which causes the physician most concern, and has led to the observation of the return of the blood to normal without recurrence. Most of those affected have been young adults.

In children it is, of course, quite common to find blood pictures suggesting leukemia after pertussis, and some other infectious processes, but in them very little difficulty is experienced in excluding leukemia from consideration. In children too the hematologist tells us the types of white cells which are found are easily recognizable and classified. The cases in adults under discussion show a quite different blood picture; the white count may not be above normal, the lymphocyte total is raised in percentage at the expense of the polymorphonuclear elements, but there always are found in

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some of the films peculiar cells of the lymphoblastic type, which are not present in children. The total white count has never been strikingly raised; sometimes it is even lower than normal. In none of our cases was the count over 20,000 at any time.

Clinically, unless the differential blood count were made, none of these would cause much uneasiness. Enlargement of the spleen and lymphatic glands naturally suggests the blood examination, and when this comes back showing an increased lymphocyte percentage, possibly up to 92 per cent, leukemia presents as a possibility. As a matter of fact, the hematologist cannot give us an absolute differential diagnosis; it is the clinical course which determines the benign character of the illness. It is quite common to encounter such a differential count, as above described, in Vincent's angina, but it must not be forgotten that a malignant acute leukemia has begun with acute infection of the mouth as well. Furthermore, Vincent's angina often is accompanied by leucocyte counts of the normal polymorphonuclear type. It has been shown also that the lymphocytosis we speak of in this paper may be found in connection with various other mild infections, especially of the upper respiratory tract or the skin. Cabot's three early cases were associated with mild wound infection, boils, or streptococcic adenitis of tonsillar origin.

One of the cases here reported had mumps two weeks before the onset of his present illness; another had a frontal sinus infection one month previously; another had a Vincent's angina; and a fourth, not reported here, was also a Vincent's angina, with a marked lymphocytosis and a lymphatic adenitis, including an enlarged spleen—all recovering promptly and remaining well. It has been possible in all these cases to exclude syphilis, suppuration and malaria.

Case 1. Multipara, aged 30, with a two months' old baby. She had double mastitis early in the puerperium which had healed six weeks before. One month before the onset she had what was considered an attack of grippe followed by a slight infection of a frontal sinus. This also recovered promptly, but she had not gained to her former condition of health. The child was weaned ten days before. Temperature, 99 to 103. First blood examined showed 75 per cent Hb., 4,500,000 erythrocytes, 10,200 leucocytes, of which 61 per cent were lymphocytes. The urine showed a large trace of albumin and a trace of sugar, which persisted several days and was proven to be lactose. There were no casts. The spleen was found to be palpable at first examination and continued to enlarge during the first week of illness. The inguinal glands were swollen and tender and no sign of inflammatory or infectious processes could be discovered in the territory which they drained. The axillary glands were large, possibly not having receded after the old mastitis. The cervical glands showed slight enlargement. There was no enlargement of the mediastinal glands and the tonsils had been removed. All symptoms abated gradually within two weeks and recovery was uneventful, though slow. Blood examination three months later showed 70 per cent Hb., erythrocytes 4,440,000, leucocytes 9,200 and differential count—p.m.n. 60.5 per cent, small lymphocytes 14.5 per cent, large lymphocytes, 20.5 per cent, mononuclear 1 per cent, eosinophile 2.5 per cent. No abnormal red cell forms.

Case 2. Single, aged 40. This patient came down with a grippy cold ten days before examination. Temperature and pulse were normal, the heart and lungs negative, B.P. 110/80, abdomen negative. Urinalysis negative except for a slight trace of albumin. The blood hemoglobin was 75 per cent; no other examination made at that time. Four months later had a Vincent's angina and at this time the blood picture was very characteristic, with an enlargement of the axillary and inguinal glands and the spleen easily palpable: Hb. 72 per cent r.b.c. 4,608,000, w.b.c. 16,600, of which p.m.ns were 23 per cent, l.l. 72 per cent. There were 2 per cent also of so-called basket cells found. This case also returned to normal in about four weeks.

Case 3. A boy of ten. Came in with a subaxillary swelling which proved to be an enlarged non-suppurating gland. He had the mumps one and a half weeks before present onset and when he noticed the above mentioned swelling nothing was found wrong with his teeth or tonsils. He had no fever nor bleeding from the gums. There was a moderate enlargement of the submental, posterior cervical, axillary and inguinal lymph nodes. The spleen was easily palpable. Otherwise, except for hydrocele of the cord, there was nothing noticeably wrong. Urine and stools were normal. Blood examination showed 70 per cent Hb., r.b.c. 4,064,000, w.b.c. 12,100, of which the p.m.ns were 14 per cent, s.l. 8 per cent, l.l. 71 per cent, eosinophile 1 per cent, basophile 1 per cent and degenerated forms 5 per cent,—a total of 86 per cent of mononuclear cells. Later counts showed a gradual return to a normal differential count with recovery.

It is from the standpoint of the clinician and clinical pathologist that this group is of greatest interest. It is obvious that we have a reaction of the patient, which is unexpected in the light of our former experience, and which strongly suggests the onset of an acute malignant leukemia. Why does not the same blood picture result from infections more commonly? Is it due to a different type of organism, or to some peculiar condition of the tissues of the individual affected? The work of Rosenow in other infectious conditions tempts one to advance the hypothesis of a selective action in this instance upon the lymphogenetic tissues of infectious organisms ordinarily not exhibiting this property. If Rosenow's contentions be accepted, an infectious agent may at one time irritate one set of tissues, and by some change may at another time show an avidity to attack an entirely different

part. It is at least conceivable that we have here an instance of the peculiar selective activity of an infectious agent upon the white blood forming tissues. No blood cultures have been reported as positive, but it is desirable that such investigation be carried out.

TO SUMMARIZE

1. Lymphocytosis, which disappears entirely, strongly suggesting the onset of acute leukemia, occurs following benign infections.

2. The clinical course of the affection alone establishes its true character; it is not to be made out from the early blood examinations.

3. Bacteriologic studies may show that known infectious agents may take on selective properties which result in a reversal of the usual polymorphonuclear leucocyte percentages in the blood, and a lymphocytosis instead.

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To educate public opinion is a painful duty, but it is one that must be faced, and each of the great professions has its allotted task in keeping the public well informed on the subject on which it can speak with authority. We may look forward to the time when many of the diseases which now afflict humanity will have gone the way of typhus, leprosy and cholera; when the average health, strength and beauty of the people will be greatly enhanced, and when those crimes and vices which crop up as if by fatality in certain stocks will be comparatively rare.

Doctors are our modern father confessors. Men and women go to them who formerly went to the clergy. They have earned and they have received the confidence of all who are in trouble about their bodies and of many who are in trouble about their souls. No one can speak too gratefully of the way in which the work is done, of the skill, the kindness, the understanding and sympathy, even the toleration of human weakness on the part of the medical profession. Nevertheless, I put this question: Does the medical profession as a whole take its proper part in guiding and influencing public opinion in these matters wherein it alone can speak with authority.—Extract from sermon by St. Louis Pastor, *Globe-Democrat.*

EXPERIMENTAL RESULTS OF CABLE GRAFTS AND TUBES OF FASCIA LATA IN THE REPAIR OF PERIPHERAL NERVE DEFECTS

WILLIAM O. OTT, M.D.
Sections on Neurologic Surgery and Experimental Surgery and Pathology, Mayo Clinic, Rochester, Minnesota

Experiments were conducted for the purpose of ascertaining comparable results in the rapidity and completeness of regeneration obtained by two methods of bridging defects in peripheral nerves, the use of cable grafts and of fascial tube grafts. The results were further compared with those obtained by end-to-end suture for control. In all, twenty-six experiments were conducted: four controls, of end-to-end suture; eleven in which cable grafts were employed; and eleven in which fascial tubulization was used. The length of the gap bridged by the cable grafts and the tubes of fascia lata was the same; the former consisted of autogenous sensory nerves and the latter of autogenous fascia lata.

The operations were performed on dogs under ether anesthesia and sterile technic. The sciatic and musculospiral nerves were used. In the control experiments of resection and suture the nerve was exposed and sectioned with a sharp scalpel and immediately sutured with fine silk. In the experiments with cable grafts the nerve was exposed, 4 cm. resected, and an autogenous cable graft inserted which was made up of several strands of either the superficial radial nerve or the internal cutaneous and, in some cases, both. The size of the graft was never less than three-fourths that of the nerve into which it was inserted. Very fine silk, one-third of a strand of No. 0 Japanese silk on a No. 12 cambric needle, was used. Usually two sutures were placed at each end of each strand in order that funiculi of the graft might accurately approximate those of the nerve into which the graft was inserted (Fig. 1). In fascial tubulization, the method described by Kirk and Lewis was followed (Fig. 2). The smooth side of the fascia lata taken from the same dog was placed within to form the lining of the tube. The bore of the tube was made twice that of the nerve being repaired.

The animals were examined often and the time of disappearance of paralysis, healing of ulcers, atrophy of muscles, and so forth, was noted. Ani-

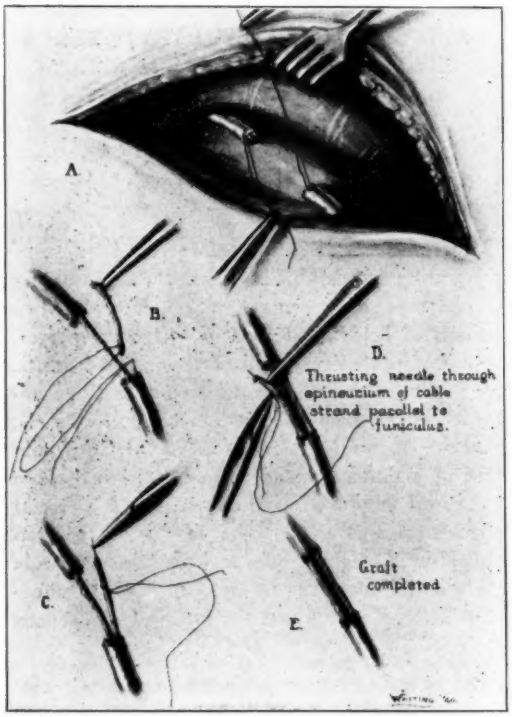

Fig. 1. Cable graft. A. Proximal and distal segments held with guide suture. B. Suturing strand in place. Each end of strand is fastened with two epineural silk sutures. C. Next stage in inserting strand. D. Fourth strand being sutured in place over the remaining funiculus uncovered in the proximal stump. E. Graft of four strands completed. Combined size graft equal to that of nerve repaired.

mals with infected wounds were discarded; necropsy was made soon after death on those that died from causes not affecting the conditions of the experiment, and those that lived until the termination of the experiment were killed under ether. The animals were etherized, the muscles supplied by the nerve experimented on were exposed by reflecting the skin, and the degree of atrophy, muscle tonus, color, power of voluntary motion, and response to electrical and mechanical stimuli were noted. The nerve proximal and distal to the graft, as well as the graft, was dissected free, the nerve was cut 2.5 to 5 cm. proximal to the graft, and mechanical, galvanic, and faradic stimuli were applied to the cut end of the distal segment. After these examinations had been completed, the animals were killed with ether and the nerves removed for microscopic study. The results of the twenty-six experiments are summarized in the accompanying table.

RESULTS

In the four control experiments, resection and suture, special attention is called to (1) the absence of adhesions around the suture line; (2) the normal appearance of the animals after from four to six months and the healed condition of the ulcers, (3) the absence of muscular atrophy, (4) the normal response to pinching and electrical stimuli applied to the isolated nerve proximal to the suture line, and (5) the normal microscopic picture of the nerve distal to the suture line.

There were eleven experiments in which gaps were bridged with cable grafts. The animals did well but not so well as those in the control experiments with end-to-end suture. The ulcers healed, the paralysis disappeared, and the animals apparently became normal after from eight to ten months. In the seven instances the estimated return of function after 334 days or more was 70 to 85 per cent. Proximal neuromas were present in all cases, but they were smaller than in experiments with fascial tubes. Adhesions to the graft

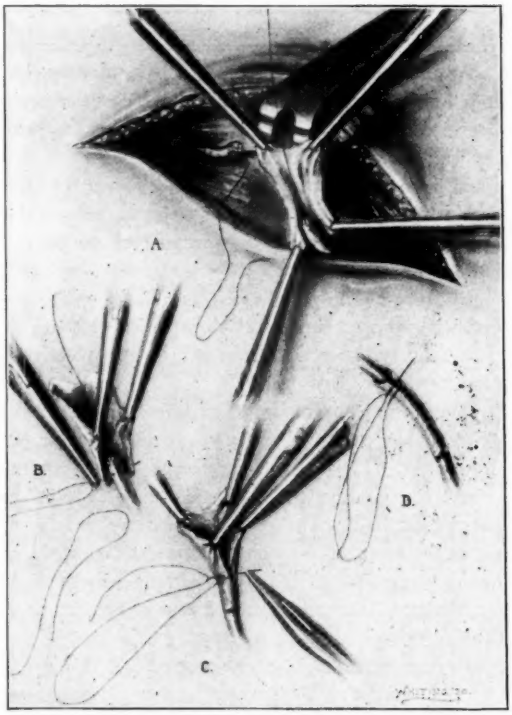

Fig. 2. Technic of nerve suture. A. Fascia lata transplant trimmed and held in defect preparatory to suturing. B. First stitch passes through fascia, through epineurium and again through graft, making a trough. C. Above suture continued along edges of fascial transplant, making a tube. D. Tube completed.

were thin and fewer than in the experiments with fascial tubes. Fibrous tissue in the graft was not seen microscopically; the spaces between the funiculi were filled largely with loose areolar tissue (Fig. 3). Fibrous tissue was not more abundant or more dense in long-standing cases than in recent cases. The fibers grew through the transplanted sensory nerve and into the distal segment (Fig. 4). At first the new funiculi occupied only a part of the transplant (Fig. 5), but later they filled it entirely. The graft had the appearance of a normal peripheral nerve in contrast to the hard fibrous band in the experiments with fascial tubes (Fig. 6).

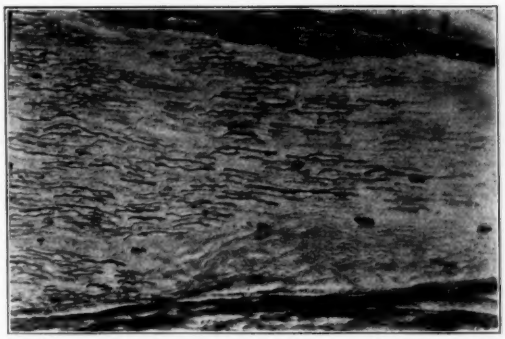

Fig. 4. (Dog D455.) Neuraxes passing from transplant into distal segment of nerve (x 100).

In the eleven experiments with fascial tubulization, all the animals did poorly; they remained paralyzed, and the ulcers were unhealed at death. In two instances in which the animals lived more than 334 days the estimated return of function was 25 and 10 per cent respectively. Return of function could not be demonstrated in the four instances in which the animals lived more than 215 days. The proximal neuroma was very large in every case (Fig. 7); adhesions to the graft were dense and firm and the graft was separated from the surrounding tissues only with great difficulty. Large amounts of fibrous tissue were seen microscopically along the graft; as much as 75 per cent of the area of a cross section was made up of fibrous tissue in most of the old cases. Fibrous tissue was more abundant and dense and nerve elements proportionally fewer in the earlier experiments. The neuraxes grew down through the fascial tube. Early, the funiculi were abundant and small, but were never so large as those of a normal nerve or of a cable graft. Later they were fewer, and ran between the dense connective tissue (Figs. 8 and 9). The graft had the normal funicular arrangement with neuraxes but in some instances after 215 days or more some of the fibers had undergone wallerian degeneration (Fig. 10).

DISCUSSION

These experiments, conducted with uniform technic under uniform conditions, make possible the comparison of results of the use of cable grafts of autogenous sensory nerve and tubes of fascia lata in bridging defects. The cable grafts yielded earlier and more complete return of function. The experiments with fascial tubes resulted in delayed and less complete regeneration, and return of muscle function was slight. The results corre-

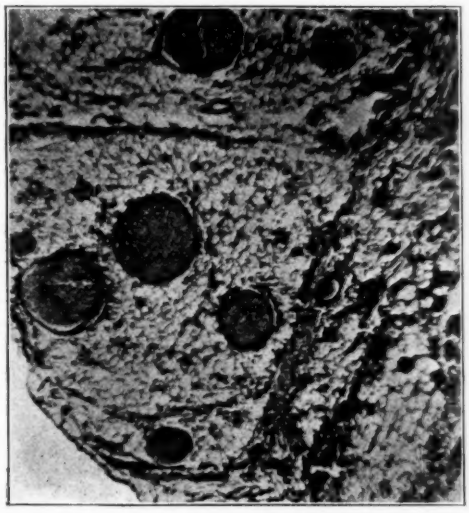

Fig. 3. (Dog D456.) Absence of fibrous tissue in nerve graft around new nerve bundles (x 25).

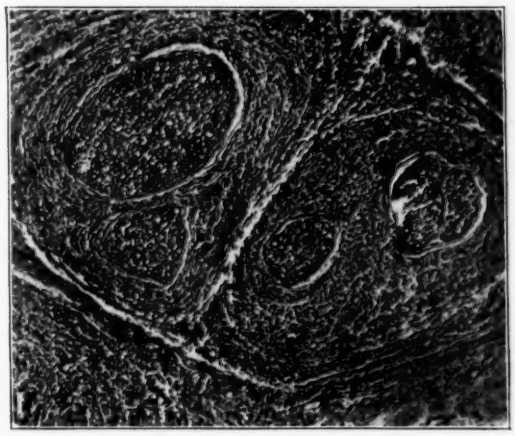

Fig. 5. (Dog D637.) New funiculi in autogenous graft (x 50).

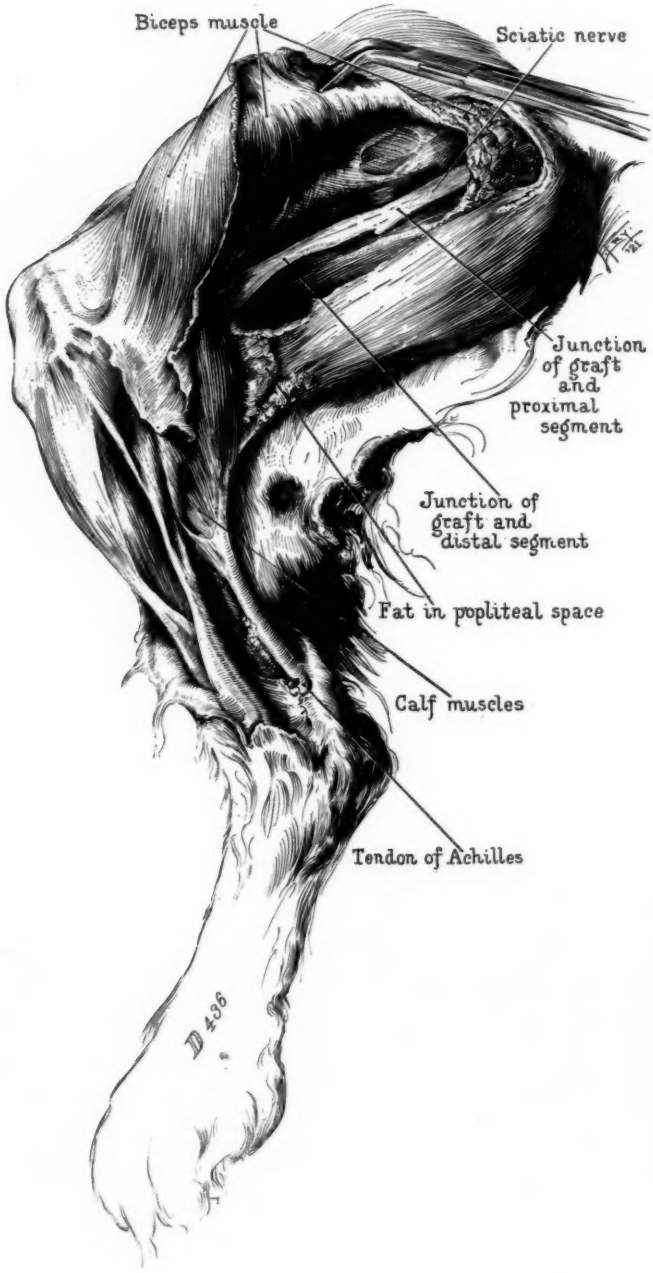

Fig. 6. (Dog D436.) Sciatic nerve with graft a very small neuroma proximally. Note development of anterior tibial and peroneal groups of muscles; 434 days after operation.

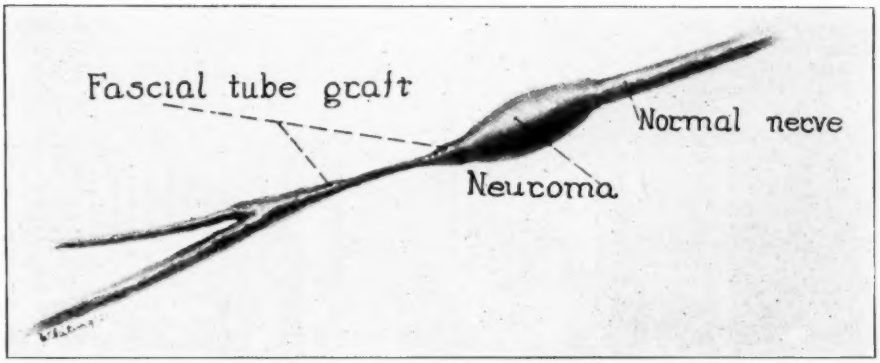

Fig. 7. Result of fascial tube graft. Large proximal neuroma. Remains of fascial tube consists of a fibrous cord.

spond fairly well with those obtained by Huber in a large number of experiments. The discrepancy in the end results as seen in the macroscopic and microscopic appearance of the grafts may be explained by the following:

In the cable grafts the funiculi remain intact and the strands are united by areolar and loose connective tissue which has the same density soon after the experiment as it has a year or more later; in other words, the normal condition of a peripheral nerve is established and maintained. In the experiments on fascial tubulization on the other hand there are abundant neuraxes with many funiculi passing through the tube at the end of two or three months and the neuraxes pass into and down the distal segment in an apparently normal manner. At this stage the main difference between the two kinds of grafts lies in the small and numerous funiculi surrounded by abundant fibrous connective tissue and the thick fibrous remains of the fascial tube in fascial tubulization. In older experiments the amount and density of the fibrous tissue is found to be increasing and the nerve elements correspondingly decreasing, so that if a tube graft is examined after one year it has the gross appearance of a fibrous cord and microscopically the funiculi are few and small. From the observations of Kirk and Lewis and others, it has been shown that the nerve regenerates through the fascial tube; protoplasmic bands form and the neuraxes pass through these to penetrate the distal segment. Funiculi are formed in the graft, each

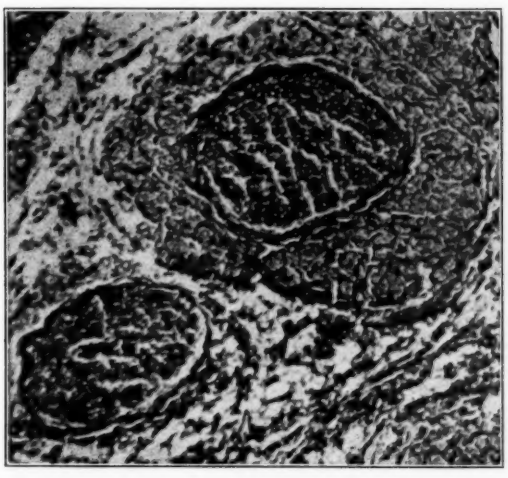

Fig. 8. (Dog C872.) Early fascial tube graft with numerous small funiculi containing neuraxes (x 50).

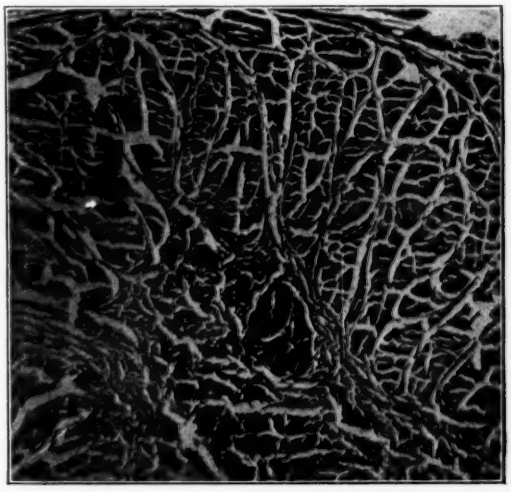

Fig. 9. (Dog C584.) Fascial tube graft 239 days after operation showing dense fibrous tissue strangulating bundles of nerves (x 50).

Table I

EXPERIMENTAL FINDINGS

END TO END SUTURE

Dog	Nerve	Signs of regeneration, months	Ulcers healed, months	Operation to death, days	Cause of death	Atrophy of muscles, degree	Size of proximal neuroma, times size of nerve	Adhesions, degree	Response of isolated nerve: Pinching	Faradism	Galvanism	Fibrous tissue, degree	Neuraxes	Funiculi	Microscopic Sections: Proximal	Microscopic Sections: Distal	Estimated return of function, per cent
D437	Sciatic	Paralyzed	Not healed	5	Pneumonia	0		+1							Fbers degenerating		Partial proximal degeneration
D436	Musculospiral	6	4	434	Killed with ether	+1	1.5	+1	+	+	+				Neuraxes normal		100
D436	Sciatic	6	4	434	Killed with ether	0	1.25	+1	+	+	+				Neuraxes normal		100
D890	Sciatic	Paralyzed		44	Killed with ether		?	+1							Neuraxes numerous, 90 per cent of normal		Regeneration progressing rapidly
CABLE GRAFTS																	
D455	Musculospiral	7	6	334	Killed with ether	+1	1.1	+1	+	+	+	0	Normal	Normal in number and arrangement	Neuraxes normal		85
D455	Sciatic	9	10	419	Killed with ether	+1	1.2	+1	+	+	+	0	Normal	Normal in number and arrangement	Neuraxes normal		85
D456	Musculospiral	8	9	351	Killed with ether	+1	1.5	+1	+	+	+	0	Normal	Normal in number and arrangement	Neuraxes normal		85
D456	Sciatic	10	10	405	Killed with ether	+1	1.5	+1	+	+	+	0	Normal	Normal in number and arrangement	Neuraxes normal		80
C830	Sciatic	Foot off at ankle	?	380	Killed with ether	+2	2.0	+1	+	+	+	+1	Normal	Normal in number and arrangement	Neuraxes normal		80
C887	Sciatic	Paralyzed		32	?		?	+2				0		Normal in number, small	Neuraxes few; partial wallerian degeneration		
D637	Sciatic	Paralyzed	Not healed	29	Killed with ether		1.5	+2				0	Normal	Large and normal	No neuraxes, complete wallerian degeneration		
D679	Musculospiral	9	9	279	Killed with ether	+2	1.25	+1	No response			+2	Numerous	Small and numerous	Neuraxes normal		25
D714	Sciatic	Foot off at ankle		339	Killed with ether	+1	1.5	+2	+	+	+	0	Normal	Large and normal	Neuraxes normal		75
D722	Sciatic	6 to 10	6 to 10	392	Killed with ether	+1	2.0	+1	+	+	+	0	Normal	Large and normal	Neuraxes normal		70 to 80
E169	Sciatic	Paralyzed	Not healed	105	Unknown		2.0	+2				0	Normal	Normal	Neuraxes normal; no degeneration		

Fascial Tubulization

C834	Musculo-spiral	11	5	387	Killed with ether	+2	3.0	+4	+	+	+	+4		Small and few, surrounded by dense fibrous tissue	Neuraxes few; partial wallerian degeneration	25
C887	Musculo-spiral	Paralyzed	Not healed	19	Pneumonia		?	+3				+1		Many and small, surrounded by leukocytes, sheath cells and débris	Occasional neuraxis; wallerian degeneration	
C872	Musculo-spiral	Paralyzed	?	49	Pneumonia		1.5	+3				+2		Small; many inside fascial tube	Neuraxes 50 per cent of normal; partial wallerian degeneration	
D584	Musculo-spiral	Paralyzed	4	215	Accidentally killed in fight	+3	1.5	+4				+4		Small and numerous, containing normal fibers	Neuraxes normal	
D584	Sciatic	Paralyzed	Not healed	239	Accidentally killed in fight	+3	1.5	+4				+4		Small and few, surrounded by dense fibrous tissue	Neuraxes 20 per cent of normal; partial wallerian degeneration	
C819	Sciatic	Paralyzed	Not healed	335	Arthritis	+3	2.0	+4				+4		Small and few, passed through dense scar tissue	Neuraxes 10 per cent of normal; partial wallerian degeneration	10?
D607	Sciatic	Paralyzed	Not healed	58	Killed with ether		2.0	+4				+1		Small and few, surrounded by erythrocytes, leukocytes, and débris, sheath cells	Occasional neuraxis; practically all fibers in state of degeneration	
D508	Sciatic	Paralyzed	Not healed	228	Pneumonia	+3	2.0	+4				+3		One, small, surrounded by dense fibrous tissue	Neuraxes, large number	?
D679	Sciatic	Paralyzed	Not healed	285	Killed with ether	+3	2.0	+4	—4	—4	—4	+3		Few, small, surrounded by dense fibrous tissue	Neuraxes, probably 60 per cent of normal; few fibers in state of degeneration	
E156	Sciatic	Paralyzed	?	198	Killed with ether	+2	2.0	+4	+1?	+1?	+1?	+4	Few	Small, containing neuraxes	Neuraxes few; partial wallerian degeneration	?
E188	Sciatic	Paralyzed	?	195	Killed with ether	+3	3.0	+4	+1?	+1?	—4	+4	Numerous	Numerous, small	Neuraxes few; partial wallerian degeneration	?

Fig. 10. (Dog D584.) Longitudinal section fascial tube graft 215 days after operation showing degenerating fibers (x 140).

surrounded by a perineurium. From my experiments it appears that at a later stage the fibrous tissue, which has proliferated inside the fascial tube, and the fascial transplant contract and strangulate the inclosed nerve fibers, thus preventing complete return of function in the nerve.

I am aware that cable and tube grafts have given poor results clinically. A plausible reason for the failure of fascial tubulization has been shown by these experiments and the same process may prevent return of function when cable grafts are used. If the graft is placed in a bed of scar tissue, as is so often the case, compression from contraction of the surrounding scar tissue may prevent functional return.

CONCLUSIONS

Experimentally, autogenous cable grafts over a gap of 4 cm. result in satisfactory return of function; they require somewhat longer time than end-to-end sutures, and the return of function is not so complete.

Tubes of autogenous fascia lata used to bridge gaps of 4 cm. result in delayed and incomplete return of function, if any at all. In most cases no return of function results.

Regeneration takes place through the fascial tubes. At first the nerve elements are abundant, but later they are largely replaced by fibrous tissue.

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THE TREATMENT OF CANCER OF THE BREAST*

FREDERICK H. KUEGLE, M.D.
Sioux City, Iowa

The modern treatment of cancer of the breast was introduced in 1867 by Moore when he contended that recurrences are not due to blood infection but to incomplete extirpation of the tumor. He recommended a general removal of the breast, skin, fat, axillary nodes and the pectoral muscles. Since his day various operations have been devised, all based on the fact that the female breast has a complex lymphatic system and that it is essential not only to remove all the mammary tissue but also the aponeuroses of the underlying muscles that harbor the lymph channels through which metastasis chiefly takes place.

It is of interest to note that in frank cases of cancer, the more radical the operation, the less liable is recurrence to occur. This, of course, only applies to those cases which are operable, for the fact must not be lost sight of that many cases do not fall into a physician's hands till all hopes of cure by surgical treatment have passed. Prim-

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rose estimates that 32 per cent of the cases presenting themselves after an average duration of 14 months are inoperable, and Deaver places the figure at 25 per cent. Hence it is apparent that breast tumors, from the standpoint of rational therapy, may be classified as operable and inoperable cases.

According to Handley the condition is inoperable when there is extensive ulceration of the skin, when there are nodules adherent to the chest wall, when the axillary lymph nodes are fixed, when there is edema of the arm, when the supra-clavicular lymph glands are enlarged, when there are signs of distant metastasis or a general carcinosis. In broad terms, then, at least one-fourth of the cases coming for medical advice are inoperable, while approximately three-fourths may be tabulated as operable.

Of the three-fourths that are operable the character and extent of the resection will depend entirely upon conditions as revealed at the time of operation. If a given tumor is of questionable malignancy, or there is a possibility that the lesion may be a pre-cancerous affection, the useless sacrifice of tissue is unwarranted. On the other hand, since gross appearances are often deceiving and procrastination is dangerous, the services of a competent microscopist to make an examination of frozen sections at the time of operation are essential. If the tumor is malignant, then an immediate decision as to how radical an operation is indicated, can be made. The importance of being over-radical in operating rather than painfully conservative is readily proved by statistics. This fact is shown by De Page's report of cases well after three years in different periods. It is as follows: from 1865 to 1875, 9.4 per cent; 1875 to 1885, 10 per cent; 1885 to 1895, 33.8 per cent; 1895 to 1905, 46.5 per cent. It was during this period from 1865 till the beginning of the present century that the great danger of recurrences following inadequate breast operations came to be fully recognized, and that a surgical technic was evolved to reduce the very high percentage of recurrences which attended resections until the late eighties.

However, even with the best of surgery, the ultimate history of breast malignancies is anything but encouraging from the standpoint of a permanent cure. This is well illustrated by LeDentu's table, which shows 47.45 per cent of operated cases well after four years, but only 6.77 per cent known to survive after 19 years. In short, even in the best of hands 52.55 per cent of operated cases recurred within a period of four years.

When one considers that recurrent cases are seldom, if ever, amenable to further surgical interference, since statistics favor the conclusion that operation on the whole shortens life in recurrent cases, and when one recalls that at least one-fourth of all cancers of the breast are inoperable when they are brought to the physician's attention, the limitations of surgery as a cure for this scourge of womankind can be fully appreciated.

The question, therefore, arises: Is there not some other form of therapy which may be used to supplement surgery to cure cancer of the breast, or at least to minimize the danger of early recurrence? This question is best answered by calling attention to the applicability of radiant energy as an adjuvant to surgery in the treatment of malignancy.

The consideration of this question, insofar as it refers to cancer of the breast, may conveniently be divided under three headings as follows: (1) the indications for *x*-ray therapy as a pre-operative measure; (2) as a post-operative measure; (3) as a palliative in recurrent and inoperable cases. Attention is again called to the fact that Primrose regards 32 per cent of breast tumors as inoperable, and Deaver 25 per cent. Here is a difference of 7 per cent, which may be tabulated as border line cases and in which operation is of questionable advisability. These are cases in which the axillary lymph nodes are enlarged and not freely movable.

At the Massachusetts General Hospital, Greenough reports that of 236 cases with papable axillary nodes only 12 per cent were cured by operation, while of 275 similar cases Finsterer reports only 4.3 per cent as cured. Ewing is of the opinion that the last figure represents the average success obtained by surgical treatment, which means that, when a woman presents an established mammary cancer with axillary nodes palpably affected and firmly fixed, she has about one chance in 25 of being cured by operation.

It is this type of case in which I believe preoperative *x*-ray treatment is indicated. If an intensive *x*-ray irradiation in massive dosage is administered in accordance with the technic now employed, the following results are to be expected: there will be a marked recession in the glandular enlargement; the cancer cells if not killed become encapsulated and their malignancy reduced; many

of the smaller lymphatic channels will be obliterated and the tendency to rapid metastasis thereby greatly inhibited. These are all desirable accomplishments, as it is a well known fact that operation causes rapid and widespread metastasis in a high percentage of these cases by opening up the lymph channels and frequently by auto-plastic transplantation. If a period of three to four weeks is allowed to elapse between the time of irradiation and operation to permit a maximum amount of peri-lymphatic fibrosis to form, then operation can be made with a minimum risk.

Boggs advocates that the operation be limited to the removal of the primary tumor and believes that the axilla should not be disturbed on account of its richness in lymph channels, which, when opened, increase the danger of a rapid extension of the disease. He thinks that with the primary tumor excised, the lymphatic involvement can best be controlled by radio-therapy, and that much better results will follow than if the axillary metastatic mass is removed surgically.

This is a point, however, which must finally be settled after a large number of these cases have been treated by our present method of massive dosage through thick filters and at high voltages, and reliable statistics of the results obtained have been compiled. . It is my personal conviction, however, that this form of therapy will improve cancer statistics if the *x*-ray irradiations are administered in lethal dosage.

I have already referred to the fact that statistics show that at least 52.55 per cent of operated cases recur within a period of four years. Could there be any stronger argument than this for the use of any method of therapy as an adjuvant to surgery that promises to prevent or even retard this high percentage of recurrences? I believe, therefore, that each and every case of operated breast tumor in which the clinical diagnosis of cancer is confirmed by the microscopist's report should receive post-operative *x*-ray treatment. If this therapy is given intelligently by a trained radio-therapeutist, certain definite results can be achieved. These may be summarized briefly as follows: any deep-seated cancer cells which have escaped removal with the scalpel can be killed outright or at least so modified in their life cycle as to cause their becoming encysted. The scar, which is frequently extensive and exceedingly painful on account of tissue retraction and which is often decidedly keloid in character, is rendered soft and pliable and entirely painless. This is an exceedingly desirable end result since recurrence along the margin of the skin incision is common. So aside from the destructive and prophylactic action of *x*-rays on post-operative, residual cancer cells, their administration speeds up convalescence and causes the more prompt return of functional activity.

In the treatment of post-operative recurrences and inoperable cases of mammary carcinoma, the radio-therapeutist during the last few years has been given ever-increasing freedom of action. To his credit it can be said that ample statistical proof is available that no other known therapy can even approximate the usefulness of radio-active energy in the treatment of terminal cases of cancer. Many patients come seeking relief from pressure symptoms caused by metastatic masses and from extensive foul-smelling, painful ulcers. These annoying, depressing and loathsome symptoms quickly can be brought under control and in an encouraging percentage of cases the sloughing ulcer can be entirely healed. Some seemingly hopeless cases are on record, in which the lives of patients have been prolonged for eight and ten years, and during this time they remained clinically healthy, leading comfortable and economically useful lives.

To sum up the subject in the light of our present knowledge, the operative field has apparently reached its limit. For this reason hope for a further reduction in the mortality from mammary carcinoma appears to depend upon the outcome of two methods of attack: first, educational; second, radio-therapeutic.

By a well worked out publicity campaign which should be under the control of the profession and probably entrusted to public health workers, the laity should be educated in reference to the initial signs of cancer and its causes insofar as known, and counseled to seek medical advice early. This should result in the detection and eradication of precancerous conditions and in the diagnosis of actual malignancy at a time when it can be removed en masse.

In conclusion it may be stated with considerable confidence that the routine post-operative treatment of all early cases of mammary cancer with *x*-rays and the pre-operative as well as post-operative irradiation of all cases of questionable operability promise materially to increase the percentage of permanent cures.

THE THYROID IN INFANCY*

T. L. Birnberg, M.D.
St. Paul, Minn.

The thyroid gland is of vital importance in the physical and mental development of the growing infant, and consequently disturbances of this gland will produce a greater effect in infancy than in adult life.

The disturbances of the thyroid in children are congestion and inflammation of the thyroid, which are usually metastatic in character, and especially observed in the course of acute infectious diseases, differing in no way from the course as found in adults. Goiter is also often found in children. It comes in various periods, occasionally being congenital and increasing in frequency between the ages of eight and fifteen years. The cause of these goiters is very little different from that of adult life, except that there is a more rapid tendency to enlargement secondary to chronic septic foci.

Exophthalmic goiter is rarely found in childhood, but when found does not differ in its course and treatment from that of adult life. Especially interesting is that form of goiter found in adolescence which usually runs a short course and is rapidly amenable to iodine treatment. Of interest is the work done by Marine on the prevention of this form of goiter by the prophylactic administration of iodine.

Of special interest in pediatric work are the conditions produced by the partial or complete absence of the thyroid, which cases come under the group name of myxedema or cretinism.

The diagnosis of myxedema is made early or late, depending upon three factors: (1) the degree of hypothyroidism; (2) whether the patient is breast-fed or bottle-fed; (3) the diagnostic ability of the observer.

The earliest that the diagnosis can be made in myxedema is at three weeks in a bottle-fed baby and three months in a breast-fed baby.

These patients show the following characteristics: in general they resemble a cave-man in type; the head is normal in size or slightly larger than normal, plump, round, situated on a short, thick neck; the fontanelles remain open for a long time; the forehead is low and horizontal; the root of the nose is broad and sunken; the eyelids and lips are thick and edematous; the tongue is large and swollen, hence it protrudes from the mouth, which is usually open; the teeth are slow in coming, and decay early; the abdomen is pendulous and marked by a large umbilical hernia; the extremities are more or less tubular, being spindle-shaped or columnar in type, and the articulations are thickened; the hands and feet are short and flabby, with short, fat fingers —the so-called spade hand.

Cretins walk late, and the gait is awkward and draggy. The skin is pale, dry, waxy and doughy in consistence. The hair is spare and brittle. The body temperature is generally subnormal. There is no perspiration whatever, even in the hottest summer; consequently the skin feels dry, flabby and cool, and easily desquamates, especially on the cheeks, and wrinkles will often form at certain parts of the body, notably at the hands and feet, such as are normally only observed in most advanced age.

Metabolism is considerably and constantly impaired, showing only 50 to 60 per cent of healthy values. As a matter of course sexual development never occurs, and entirely corresponds with the general condition. Even in adult age the patient shows complete infantilism.

The mucous membranes participate in the myxedematous change, as shown by the tongue, the molar mucosa and the rough voice. The mucous membranes of the oral cavity and tongue are thickened, the latter being exceedingly large from the abundance of myxedematous connective tissue between the muscular bundles. The tonsils are hypotrophic, the gums narrow. The tongue protrudes from unshapely lips, the respiration is grunting and snorting, and the voice rough, unpleasant and inarticulate.

The blood-forming organs function badly. There is great pallor, and the complexion is usually of a sallow hue. The hemoglobin content is low, there are numerous forms of erythrocytes of varying ages, and the polynuclear leucocytes are increased.

Fatty tumors are present in the supraclavicular and axillary spaces.

The intelligence varies from that of a child a few years younger to that a little above an animal. The expression of the face is that of a man with the cares of the world upon his shoulders. The voice is husky, and due to their timidity they rarely speak.

Their musculature is weak in general; conse-

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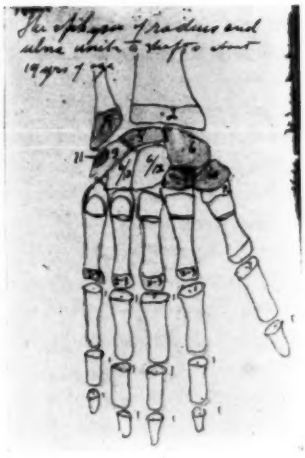

FIG. 1

FIG. 2

FIG. 3

quently they are constipated, and stand and walk late.

The bony changes are most important from a diagnostic point of view, and show delayed ossification and diminished growth of the long bones. In fact, they represent the normal condition of a child a few years younger.

The mongolian idiot is most often confused with the cretin, making the differential diagnosis important.

The mental state of the mongolian is entirely different. Instead of being sad and depressed, he is happy, vivacious, and a great mimic, continually getting into mischief, while the cretin is timid, quiet and sad. Often the mother mistakes the mongolian for a bright child, but on questioning you will find that he is hard to train and to make obey. The head of a mongol is brachio-cephalic instead of round like a cretin. The mongol's face is flat, the hair long and stiff instead of spare and brittle like a cretin. The eyes of a mongol have the characteristic Mongolian slant, while the eyes of a cretin are horizontal, even if puffy and narrow. Over-development of the epicanthic folds (the third eyelid) of the eyes are typical of the mongolian idiot. The bridge of the nose is flat in a mongolian idiot. The nose is so small it looks like a buttton, and the nostrils point forward.

FIG. 4

FIG. 5

FIG. 6

FIG. 7

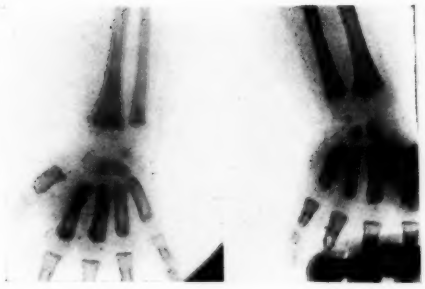

FIG. 8

FIG. 9

In a mongolian the mouth is open as in a cretin, and the tongue often protrudes, but this is not due to a large tongue as in a cretin, but to lack of intelligence.

Blepharitis is common in mongols, and rare in cretins. Also, mongols often have fine radio-fissures in the mucous membranes of the lips. The skin in mongols is entirely different from that in the cretin; it is not doughy, pale and dry, but nearly normal. Especially is this noticeable in the face, where, in contrast to the cretin, the mongol shows considerable color, having a dab of red in each cheek and a dab of red in the chin, like an actress prepared to go on the stage, while the face of the cretin is pale, dry and pasty.

Hypermotility of all the joints is a diagnostic point of value in mongolian idiocy. The limbs of these patients can often be twisted like those of a rag doll. A most important point in differential diagnosis is to be gained by determining the proportion of the length of the limbs to that of the entire body, which is diminished in a cretin, but not in a Mongolian idiot. The mongolian hand has a characteristic short, curved little finger.

Although typical cases of cretinism can easily be recognized, still we often have difficulty in diagnosing atypical and partial myxedema. Occasionally in spite of these differential diagnostic points we encounter considerable difficulty in differentiating atypical cases of mongolian idiocy from myxedema. The *x*-ray findings offer at present a very simple, easy and accurate means of diagnosing typical and atypical cases of cretinism and of mongolian idocy, and I shall explain *x*-ray findings in these conditions, and show a few plates of each condition, as in these difficult diagnostic borderline

FIG. 10

FIG. 11

FIG. 12

cases one glance at an *x*-ray picture will conclusively settle the diagnosis.

In cretinism we have two *x*-ray changes: (1) shortening of all the long bones; (2) delayed appearance of the centers of ossification. In mongolian idiocy we have no delay in the appearance of the centers of ossification; in fact, in my experience, they sometimes occur before the normal. Besides this, we have a point of great value in *x*-ray findings of the little finger in a mongolian, where we find present a tendency to curving of the little finger, with considerable shortening of the middle phalanx. In fact, so small may this middle phalanx be that it may represent a cube or marble.

Fig. 1. The normal hand, showing the centers of ossification as they occur from infancy to childhood.

Fig. 2. A normal hand at three years of age, showing the state of development at that age.

Fig. 3. A child six years seven months, who was brought to me because of underweight. This child had the figure and height of about a three-year-old child. The father said to me: "Everybody says how cute my child is, but they don't realize that he is six years seven months old." On looking at this *x*-ray picture you will see that he has the *x*-ray findings of a child only two years old, making the diagnosis of cretinism positive.

Fig. 4. The same patient as Fig. 3 after three years of thyroid treatment. Note the rapid improvement in the bony structure, which also corresponds with the physical improvement.

Fig. 5. A child seven months old who was brought in because the child was mentally backward—did not grasp objects or attempt to sit up. I was told that the child was a cretin. On observing the *x*-ray picture you will see there is no delay in the centers of ossification, and also see nicely the mongolian little finger.

Fig. 6. Child 22 months old, brought to me because the child was underweight. A little constipated, otherwise child did not show marked deviation from normal except his fingers were slightly short. *X*-ray picture shows clearly the complete absence of ossification in the wrist. In other words, his wrist is that of a child five months old.

Fig. 7. Same child a few years later, showing the result of thyroid treatment.

Fig. 8. An interesting picture of a child 18 months old, brought for backwardness, both physical and mental. *X*-ray shows normal centers of ossification and the mongolian finger. Also shows definite syphilitic changes in the lower end of the radius and ulna, showing this to be a combination of syphilis and mongolian idiocy.

Fig. 9. Child brought to the clinic, aged one and one-half years. This child had the weight of a child of five months; showed no desire to sit up, or even grasp objects. *X*-ray picture shows clearly the complete absence of centers of ossification in the wrist, indicating clearly that it is a case of hypothyroidism; the rachitic changes in the bones are also seen. Diagnosis: Cretinism and rickets.

Fig. 10. Child six years old, considerably under weight, pale, pot-bellied, large head, constipated—being treated for a long time for rickets, with only slight improvement. *X*-ray shows unmistakably that centers of ossification are those of a child only six months old.

Fig. 11. Under thyroid treatment the child (Fig. 10) made wonderful improvement, and in two years this is the result.

Fig. 12. Child two and one-half years old, not walking, constipated, hard to manage, below normal in size. *X*-ray picture shows clearly centers of ossification to be normal or above normal, showing also clearly the characteristic little finger of the mongol.

THE EARLY SYMPTOMS OF ACUTE POLIOMYELITIS*

W. H. VALENTINE, M.D.
Tracy, Minnesota

The committee on clinical research of this association, desiring to stimulate keener clinical observation and the keeping of more careful case records, decided to make a survey of the early symptoms of acute poliomyelitis.

A questionnaire was made embodying, first, the observations of the parents of the first signs of illness as told the physician, then the clinical findings as given by the physician himself. A few questions were asked in regard to treatment and results. One of these questionnaires was sent to each of the five hundred members of this association and also to each of the two hundred and fifty physicians who had reported cases of poliomyelitis to the State Board last year.

Out of the 750 sent out 169 replied; 27 of the number were doing special work that did not bring them in contact with this disease; 45 reported that they had had no recent cases or that their records were so incomplete that they could not use them to any advantage.

Two things are a matter of regret, namely, that so many physicians showed so little interest in this project that they did not reply, and many of the questionnaires returned were so incomplete that they were of little value. This result would indicate that the average physician does not make a thorough physical examination and get a careful and complete history, or if he does he does not keep satisfactory case records. The latter may, in many cases, be due to lack of time.

It was under this handicap that the writer attempted to correlate the following material gath-

*Presented before the Southern Minnesota Medical Association, Rochester, Minn., June 19, 1922.

ered from the reports of the 97 physicians, reporting about 150 cases.

There were more males affected than females. The youngest case reported was five months and the oldest thirty-three years; the majority were under eight years. The mental condition is shown by 23 per cent being irritable, 55 per cent restless, 42 per cent drowsy, one having insomnia. Fever was moderate in a large majority of cases while it was almost normal in some, and 7 per cent were 104 degrees or over. Intestinal disturbances were shown in 49 per cent by vomiting, 15 per cent by diarrhea, and 42 per cent by constipation in some cases very marked and persistent. Four per cent simulated appendicitis and 9 per cent had abdominal cramps. Pain in the form of headache was present in large majority of cases; 48 per cent had pain in the neck and 38 per cent had backache; 39 per cent had general muscular tenderness. Tremors were present in 14 per cent, twitching in 17 per cent and retraction of the head was noticed in slightly less than half the cases in which the symptom was reported. A positive Kernig was present in thirty-five cases and absent in sixteen; a positive Babinski in twenty-one and absent in nineteen; a positive Brudinski in eight and absent in twenty-one; and a positive Gordon in five and absent in sixteen.

The eye symptoms were varied, showing pupils dilated in 33 per cent, contracted in 4 per cent, while 24 per cent were normal. Only two showed strabismus; twenty-seven reacted to light normally; none reported nystagmus. Respiratory symptoms were present in fifty-nine and absent in twelve.

As to the source of infection one was bitten on the lip by an insect while in a town where poliomyelitis was epidemic. Several had slight trauma and several had unusual physical exhaustion before contracting the disease. One case was reported where the mother took the children to the funeral of an uncle who died of poliomyelitis and ten days later two children developed it.

Twenty-seven per cent had definite sore throat. The frequency of sore throat confirmed the writer's opinion of the tonsils playing an important part in this infection. With this in mind a second survey was taken. Nine per cent of the cases had had tonsillectomies, 10 per cent of the physicians were in doubt as to the part played by the tonsils, 15 per cent were positive that they had nothing to do with it, while 54 per cent stated that they believed that there was a relationship between the tonsils and the immunity to the disease.

This verifies Dr. Rosenow's theory that the throat and nose play an important part in this disease as the chief port of entry of the infection.

There seems to be no question but that there are abortive cases or, in other words, infection that does not produce any paralysis but only a slight muscular weakness which passes off in a short time and could not be diagnosed even by a careful diagnostician if he were not on his guard and watching for cases of this kind, because of the existence of other poliomyelitis cases.

In the epidemic last year there were a large number of cases that showed meningeal involvement. These cases have, as a rule, headache, vomiting, general pain, rigidity of the neck, more or less opisthotonos, and a positive Kernig or Babinski reaction. Twitching is frequently present.

Spinal puncture should be made upon all suspected cases, for diagnostic purposes, as well as for the relief of pressure; and it gives opportunity to inject serum around the spinal cord. Spinal fluid should be replaced with serum in slightly less amount. The above procedure seems to meet with almost universal success.

At the present time the writer has an interesting case that comes under this last mentioned type.

Irene A., aged 2½ years, strong, robust, never had any previous illness.

May 31st she stepped on a piece of glass, cut her foot slightly and cried nearly all night.

June 1st, she ate strawberries and beans at noon, vomited at 3:00 P.M. and complained of earache.

June 2nd, she played until 4:00 P.M., when she cried and wanted to be carried. She was put to bed and slept till supper time, refused supper, and was restless all night.

June 3rd, she had headache and sore throat, was constipated, and her temperature was 104. The child was brought to my office in the afternoon and the mother told me a day or two later that the child had tremors in the arms in the morning but not in the afternoon.

June 4th, the bowels were open but the temperature was 103.5 degrees in spite of bathing and phenacetin gr. 1 every two hours. She complained of very severe headache, was very restless, crying and at times was delirious and did not know her mother. The leg and back muscles were very tender. The head was slightly retracted and she could be raised to a sitting posture by placing the hand back of the head. A positive Kernig was present. The knee reflex was lost and the Babinski, Brudinski and

Gordon reactions were negative. As there was no serum in town none was used.

June 5th, the tenderness and stiffness now involves the as well as the legs, and the back and neck were very rigid. Headache and difficulty in swallowing were complained of. Mother said her daughter had dark red spots the size of a twenty-five cent piece on her legs and buttocks and the arm that lasted three hours. These were not present when she was examined by the writer. She had a strange "wild cry." Spinal puncture obtained 15 c.c. of clear fluid under much pressure.

June 6th, general condition improved, temperature 102, right forearm and hand paralyzed but not completely, some headache, tenderness less. Condition so improved that spinal puncture was not thought indicated.

June 7th. More headache and restlessness, slightly more fever. Twenty-five c.c. of spinal fluid were withdrawn and 20 c.c. of serum injected.

June 8th. General improvement, she used arm better. Spinal fluid has been sent to state board but no report received as yet.

After a careful study of all of the cases reported, one is impressed with the fact that it is absolutely impossible to make a set of classical symptoms for this disease. However, the occurrence of sudden illness in a child between May and late fall, especially in dry weather, which is characterized by moderate or high temperature, headache, vomiting, restlessness, stiffness of back or neck, especially if there is tenderness of the muscles of the body in general or any special group, should place the physician on the alert for poliomyelitis. The finding of a positive Kernig sign and the loss of the knee jerk should be followed by spinal puncture; should paralysis supervene it will be in groups rather than in individual muscles and they will retain their sensation.

Since starting this paper an article has appeared in the Journal of the A. M. A. by Dr. Lovett of Boston, which covers this subject in a masterly manner. I will close by quoting his conclusion. "The important points are that the diagnosis must not be made on the history but on the physical examination; that tenderness is a guide of great importance in diagnosis, prognosis and treatment; that early treatment consists of rest, and that in the convalescent phase, muscle fatigue is one chief danger and muscle re-education one chief reliance and that deformities prevent proper functions and promote muscular deterioration. If these points are borne in mind, many patients can be spared much unnecessary deformity and disability and we shall be able to take a much more hopeful view of the outcome of poliomyelitis.

ABORTIONS AND CURETTEMENTS*

W. G. Strobel, B.S., M.D.
Duluth, Minn.

Curettement as an operation is vanishing from the lists of many of our best manned hospitals. The present consideration does not concern itself with diagnostic curettement for suspicious malignancy, a procedure well founded where the evidence points to invasion of the uterine body. In like manner, curettement for persistent bleeding, supposedly from fibrous or fibroid uteri, has a useful field, although *x*-ray and radium are fast limiting this indication for active scraping of the inside of the uterus.

Therefore, a hospital that shows an unusual percentage of curettements probably has on its medical staff men who invade the uterus *early* in conditions associated with pregnancy. It will be the purpose of this paper to attempt to show how seldom curettement is necessary after various types of abortion, and also to present certain statistical data from the records of St. Mary's Hospital, Duluth.

THE MATERIAL STUDIED

Eighty-seven hospital records of patients treated during 1921 were canvassed.

Seven women who came in with bleeding and threatened abortion went on to full term, leaving a series of eighty who did abort. These same women gave a record of having had three hundred and seventy-one pregancies at full term. This shows us an incidence of abortions to full term of 1 to 4.6. During the same period there were five hundred and fifty-five cases of confinement in the hospital, which gives a general incidence of abortion to full term confinement of 1 to 6.8. From the data of authors consulted on this subject, this seems much lower than the rate usually given.

It is noteworthy that the histories are particularly defective in not pointing out clearly the causes of the abortions. No doubt at times this is a very difficult piece of information to get; many women positively refuse to yield up the facts.

While most of the cases were entered on the records as having occurred from one to three months after the beginning of gestation, there were many records in which no data was given. The time of gestation was given as two months in

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twenty-eight cases; three months in fifteen cases; three and one-half to six months in nineteen cases; the time not given or estimated in twenty-five cases. A careful perusal of the records in this later group of twenty-five cases would strongly suggest pregnancy was either very early, or one might doubt whether it was present at all.

THE GENERAL TREATMENT FOLLOWED

Seventeen cases of this series were treated expectantly: rest in bed; sedatives and opiates, to yield comfort; general avoidance of meddlesome interference. It is of particular interest to note that of these seven were delivered at full term, despite the fact that three of them had fever on admission to the hospital. Of these seven coming to full term, five had healthy babies; there was one stillbirth, and one productive of a spina bifida (probably entirely an accidental phenomenon). There was one further patient treated expectantly at two and one-half months of her pregnancy, who later was curetted at the seventh month for a missed abortion, that had probably gone on to about four and one-half months' development.

In this same series of seventeen there were four cases that had a temperature of 103° F. on entrance who delivered themselves spontaneously of the fetus and placenta in from eight to twenty-four hours, and were thereafter normal. In none of the remaining did excessive hemorrhage necessitate curettement; the temperatures of all were normal in from one to three days, with the exception of one patient, who on the fourth day developed a temporary rise of temperature that immediately came to normal on the fifth day.

Of the remaining seventy cases that were not given the expectant treatment, all had some form of surgical intervention, either dilatation, curettement, packing, or a combination of all three. One patient seemed to have many repeated instrumentations.

In this series of seventy there were two deaths. One on admission had typical tetanus following a criminal abortion produced some six days before her entrance (no other outcome could well have been expected). Death followed in the other case after various vaginal examinations and treatments, and daily instrumentation in the dressing room for a period of five days. The chart shows that the temperature curve was normal until the fifth day; thereafter signs of peritonitis developed. Her attending physician gave her repeated doses of Epsom salts and pituitrin; after the peritonitis became more acute he added compound cathartic pills. She aborted on about the sixth day, and death ensued six days later of general sepsis. One hesitates to offer too definite criticism, but this mortality seems inexcusable.

MORBIDITY AND TIME SPENT IN THE HOSPITAL

The average time spent in the hospital by all of the eighty-seven cases was 6.1 days; those treated expectantly averaged 4.9 days; the seven treated with various modifications of surgical intervention remained in the hospital an average of 6.8 days, or nearly two days more than those treated medically.

Of the seventy cases treated surgically, twenty-nine had some temperature following this intervention. As a rule, these temperatures came down on the second or third day thereafter; the most serious cases were preceded by a chill, and in this group twelve mentioned this specifically. In addition, eight cases had some temperature on admission. We should note particularly that four of these were not curetted until four days after a normal temperature; they all did exceedingly well. The other four, curetted at once, had a very stormy convalescence.

A CONSIDERATION OF THE DIAGNOSIS INVOLVED

A study of these cases shows that diagnosis is surely one of the most important problems involved. Manifestly, we should do nothing until we have investigated as thoroughly as we can, and then come to our judgment as to what to do, depending on circumstances:

1. Is our patient pregnant?
2. How long is she pregnant?
3. Is the fetus dead?
4. Is it a case of missed abortion?
5. What complications are present?
6. Is the abortion complete or incomplete,
7. Is our patient septic,
8. If the process of abortion is imminent or occurring, are we dealing with:
    (a) One started criminally.
    (b) The result of habitual abortion.
    (c) Following syphilitic disease.
    (d) Due to pelvic tumor, or,
    (e) Lacerated cervix, malposition of the uterus, etc.

A very careful history will help us with all of the above eight factors. Sometimes it will give us an absolute diagnosis and tell us almost everything we have to know. However, we must make careful physical examinations. This includes a thorough inspection of the entire body, taking pulse, temperature, respiration, urinalysis, etc. Knowing as we do the great influence of syphilis*, the various laboratory procedures aiding in establishing that diagnosis will, of course, not be overlooked. Whenever possible, all vaginal discharges that the patient has passed should also be examined. Needless to say, vaginal examinations should never be made on these women without using all surgical aseptic precautions.

DIAGNOSTIC DIFFICULTIES ASSOCIATED WITH MISSED ABORTIONS

This diagnosis is not readily hazarded by the attending physician. This is indirectly suggested by the fact that one physician made all the diagnoses under the grouping shown in this series. Outside of the records here discussed, the writer has previously made this diagnosis once. It must, of course, be definitely established that the product of conception has ceased to grow. As a rule, the uterus does not enlarge after death of the fetus. There are, however, some exceptions, for we may have hydatid formation or polyhydramnion. Of five cases observed, the following features were noteworthy: in all there was cessation of menstruation; in three, uterine enlargement was noted from month to month up to three and one-half months, four months, and five months respectively; thereafter, on repeated monthly examinations the uterine size remained stationary.

In one instance, the differential diagnosis strongly suggested a possible ovarian cyst—the patient had previously been operated on for that condition; there was also a distinct mass to be felt besides the larger one, which was evidenly the uterus. The mass that ultimately passed, however, left no doubt as to the correctness of the diagnoses of missed abortion.

Another patient, with an apparent eight months' pregnancy, passed a complete placenta, fetus, and unruptured amniotic sac, with the apparent size and development of about three months' gestation.

In another instance, a number of physicians had observed the patient, and on the whole agreed that she had a tumor but was not pregnant. Like the preceding case mentioned, she also had never felt life. Unfortunately, she miscarried after about six and one-half to seven months, but the product was lost, and its identification therefore uncertain. Dr. J. C. Litzenburg mentions this condition as being very common, but states that the cause is unknown. He cites cases that have had irregular bleeding, an afternoon temperature, and general signs of intoxication.

THE PROPHYLAXIS OF ABORTION IN GENERAL

This is a very large feature of this subject, and we may only touch on the most important divisions:

1. Treat all luetic suspects, male and female.

2. All cases of endocervicitis should be eradicated.

3. Lacerations should be repaired.

4. Warn the patient in regard to danger of criminal abortions.

5. In abortions dependent on diabetes, anemia and other malnutrition cases, such as tuberculosis, use reconstructive treatment, such as fresh air, plenty of water, good and proper food, rest and blood-forming drugs.

6. Women with aborting habit should be given rest of two or more years before conception is again permitted.

7. Never give any strong cathartic or quinine to pregnant women except possibly cases of malaria.

8. Have patients avoid all infectious diseases as far as possible.

9. Avoid strenuous exercise, especially anything in which severe falls or strains are apt to occur.

10. In the teaching and training of young women it is manifest that they should be trained in proper habits of exercise, diet, and the securing of rest, so that they may expect to possess a normal pelvis and a stable nervous system.

11. Prevent lacerations at confinement.

12. Careful prenatal and postnatal observation of your patient.

13. Avoid meddlesome surgery of the pelvis. In

*Syphilis: Lewis A. Conner, Oxford Med., vol. V. p. 685, quotes Kassovitz—from 330 syphilitics, there were 40 per cent abortions or premature deliveries. Osler: "Earliest pregnancies end in abortions; then dead children born; then premature living children; then full term syphilitic children; finally full term healthy children."

doing any necessary surgery on a pregnant woman be very careful in the handling of the viscera, especially the ovaries.

THERAPEUTIC ABORTION*

Therapeutic abortion is a very delicate subject and should be handled with very great care, and every available method at our command should be used before we ever suggest it. It is very seldom necessary, even to save the life of any patient. This, as a rule, can be accomplished by very hard, painstaking effort. Ascertain the cause of your trouble and you usually can overcome most cases with persistent effort and treatment. I do not maintain that it is never necessary, but we find such men as DeLee enunciating firmly that it is very seldom necessary even in the most extreme cases of hyperemesis gravidarum. He advises the same extreme caution in early tuberculosis, in heart or kidney conditions, or similar states. Therefore, watch your step. There can be no question but that the incautious, not to say unprincipled, among us, have been led into the doing of abortions by the presumed weight of authority advocating this measure.

DETAILS OF TREATMENT, DEPENDING UPON THE TYPE OF ABORTION

Every case of threatened abortion should be put to bed, with complete rest, opiates, restricted diet, and often with ice packs to the abdomen. The adoption of this simple plan will surprise many who are prone to early interference. In this series there were several cases which had quite marked bleeding, some, even, considerable temperature on admission; nevertheless, they went on with the pregnancy and were delivered at full term.

The cause of temperature must always be determined. One patient in this series had a temperature due to a severe, concurrent bronhcitis; one a streptococcic sore throat; one an abscess of the posterior vault of the vagina, caused by a crochet hook used with criminal intent. Even this last patient was delivered of a baby girl, perfectly well and normal, the great pride of an indulgent mother.

It is absurd to allow the patient's feelings to sway our judgment in any degree. You would not commit murder in any other way; why should you do it to please hysterical women or confused girls?

For inevitable and incomplete abortions naturally a quite different course may be indicated. Different authors seem to disagree considerably as to the method. The following considerations may at least be offered:

1. Remember that all criminal cases of abortion are potentially septic, and should be treated as such.

2. No operative procedure should be carried out until your case is afebrile for at least five days. It is stated that a pelvic examination that is followed rather promptly by an increase in the number of leukocytes or temperature gives the hint that the period of delay should be prolonged some days later. Whenever the signs of activity have all abated, you may proceed as if the case were non-septic. (There may be an exception to this if your patient has profuse hemorrhage that threatens life, or you have a fully dilated cervix, with the cord or other material protruding that is easily evacuated.)

3. It can be generally assumed that where the cervix remains closed, external interference is unjustified.

4. In non-septic cases, if you are satisfied that all contents have passed, merely advise rest in bed. Patients that are not bleeding may be put to bed and given small doses of ergot repeatedly; the contents will usually be expelled in twenty-four hours. The uterus may then be inspected with the finger, or a dull curette if necessary. Remember, that the curette has killed more women than it has saved. If a case has frank hemorrhage and the cervix is dilated, remove contents with finger if possible; otherwise with a placental forceps or dull curette. Never use a sharp curette. If the cervix is not dilated you can pack the cervix with strips of gauze, then pack the vagina. On the following day, when you remove the pack, the uterine contents will usually be expelled with it. Or, you may very carefully dilate the cervix best with Hegar's sounds or graduated dilators, and then either with the finger or dull curette remove contents. With patients that apparently have expelled all the contents and still keep up a profuse discharge from day to day, it is sometimes necessary to dilate and curette.

All the above operations must be carried out with absolute surgical asepsis, the same as in any

*Those who practice in Catholic hospitals know full well the attitude of their church on this subject. To the casual and uninitiated this may seem at first glance an extreme position. Going over, however, the whole situation, it is striking how nearly the best obstetrical teaching is coming to approximate the Catholic church's position.

cervical operation. The uterus should be swabbed out with iodine following curettement.

In cases of missed abortion the same rules hold as for incomplete or inevitable abortion. Dilatation and curettage early in pregnancy; after twelve weeks introduction of catheter and tight packing of the cervix; or, as DeLee recommends, trachelotomy.

In all cases gross and microscopical examinations should be made of the uterine contents. You will be surprised how much value this latter will be to you. One case that was in the hospital in the past year died later of chorio-epithelioma. This certainly would have been discovered by careful examination.

Cases that develop peritonitis should be kept quiet in bed, with the head of the bed elevated about twenty-four to thirty inches. Opiates should be freely used and should be given to tolerance, which is usually best judged by watching the respiration. Give continuous proctoclysis of 5 per cent sodium bicarbonate and glucose. Wash out the stomach frequently; as soon as possible give fluids by mouth. If necessary, use hypodermoclysis, intravenous glucose, and even transfusions of blood. It is doubtful whether serums have any particular value.

SUMMARY

We may briefly summarize the salient features as follows:

1. Always be sure that your patient is really a case of inevitable abortion before attempting any surgical interference.

2. Never take the patient's word that she has an incomplete abortion.

3. Never use operative measures on a septic case until the patient is four to five days fever-free.

4. Avoid curettement as much as possible; for conditions associated with pregnancy it is very seldom necessary. The number done in any hospital becomes easily an index of the ethics of the adjacent communities, not to say the medical staff.

5. Never give pituitrin or cathartics in cases of beginning peritonitis.

6. In patients with a tumor mass and history of possible pregnancy be sure to look for missed abortion.

FACTORS IN LONGEVITY*

J. E. Crewe, M.D.,
Rochester, Minn.

In these days one hears many pessimistic views in regard to degeneracy in the race, both moral and physical. Perhaps it has always been so that the older people of the living generation have lamented the loss of virtue and physical prowess that obtained in their youth. Writers are ever busy in trying to stem the pessimistic wave, but in spite of the desire to view things optimistically one cannot help wondering if the pleasures of the young people of today do not indicate a moral degeneracy which must be followed by a physical degeneracy. It is difficult to feel that the dances and music of the younger people does not mean a moral decadence.

Scientific data on the relative physical robustness of the present and past is not readily available, but the general opinion is decidedly that we are losing in robustness and vigor, and there can be no doubt of the decrease in dental vitality which, alone, is a factor of great importance in regard to health and vigor in the immediate future.

Most doctors have been under the impression that the average length of life has increased a great deal in the past ten years. According to the American Table of Life Expectancy there has been no change in twenty years after the age of sixteen. Statistics by the Metropolitan Life Insurance Company just given out show that there has been an average increase of two and three-fourths years in the past ten years, but that this increase is due chiefly to improvement in the early years. We look upon this as a great achievement, but in view of the wonderful progress in medicine, surgery, dentistry and public health, this increase should have been much greater. The greatest advances have been made in the past fifty or sixty years. The great mortality due to the various plagues and epidemics has been practically wiped out. Smallpox, yellow fever, typhoid fever, diphtheria, scarlet fever, etc., are seldom encountered now and are of much lessened virulence. Better knowledge of infant care has lessened infant mortality. Puerperal sepsis is practically a thing of the past. The wonderful sur-

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gery of today has prolonged many lives. We have not so much failed to combat disease as we have failed in our inability to recognize and rectify the things that are blocking progress and causing disease and early decay and death. As a matter of fact, if we had all the scourges and plagues of seventy years ago and the same state of medical knowledge as then, the average length of life would be much less than obtained at that time because of our food conditions and lessened resistance and robustness.

In spite of the wonderful progress in dentistry and care of the teeth, the people are suffering more from dental disease and earlier loss of their teeth. In spite of all the medical and surgical advances the span of life has been increased but little and more doctors are making more money than ever before.

With the progress of civilization some factors have crept into our lives that I believe are potent reasons why the laudable achievements in medical science have been blocked, in a measure, in securing for the people those things so much to be desired, longer life, greater robustness, and less sickness and good teeth.

The most important factors have crept in so insidiously under the guise of improvements that their importance has not been recognized. The most important is food. It would seem that nothing new could be said about this subject. Many will deny that food is a potent factor because there has never been a time when food was so abundant and varied. Better transportation brings us food from every clime. Better storage preserves it and there is practically no food that cannot be preserved in some way. And this is the crux of the whole thing. We are living on preserved foods or foods kept in storage. The bulk of our food is not fresh.

The study of uncivilized and semi-civilized peoples discloses the fact that they have little disease. Cancer is rare. Bad teeth and digestive troubles are uncommon, yet in most instances their food is limited in variety. I wish to bring out clearly the one most important point and that is the value and vital importance of freshness in food. Much has been written about vitamins and about white bread and the canning and preserving of food. Flour ground from whole wheat is better than white flour because it contains the vital part of the seed, the germ, and also the envelope, which contains mineral and chemical substances of value. But flour made from whole wheat loses in value and flavor when it is stored. The Mexican lives mostly on beans and corn cakes. Seeds of plants with the envelopes unbroken retain their life and freshness a long time. The Mexican grinds his corn in a mortar every day. Nuts, unbroken, preserve their freshness and vitality a long time, but broken or ground-up, they soon become unfit for food. Corn, ground, will not keep long unless it is degerminated. The cornmeal you buy does not contain the vital element, the germ. The difference in flavor in freshly ground grain and the same after storage is quite apparent. In my own household for the past year we have had little white bread, but our bread is made from good wheat ground as used, in a little hand mill. We use no prepared breakfast foods, the freshly ground wheat and corn being much enjoyed by the entire family. In the matter of expense, 60 pounds or one bushel of wheat costs $1.60. Some of the prepared breakfast foods sold in four ounce packages at 15c cost $36 for 60 lbs.

Everyone knows the difference in flavor of vegetables fresh from the garden and those bought in the market, and who can doubt that there is a difference in food value? Great variety of food is not necessary, but not objectionable, if fresh and properly balanced. The Esquimaux thrives on a diet of meat and fish. The people of the western part of Argentina live almost exclusively on meat, averaging about five pounds a day. Some people of the South Seas live on little islands built of coral rocks and devoid of vegetation except a few cocoanut palms. Their diet is exclusively fish. These people have wonderful physiques and are most robust.

The study of vitamins is undoubtedly of vast importance and much valuable work has been done on this subject in recent years, but if we could eliminate stored and preserved and over-cooked foods the subject could be ignored, as most any food in the fresh and raw state contains sufficient vitamins. Of course it is not practical for all people under all conditions to have all their food supplied in a fresh condition, but they can be taught the importance of this and at least use more fresh food and less preserved and stored and over-cooked food.

To me, in considering what is meant by freshness, I have in mind the thought of life: the fresh, crisp stalk or leaf of vegetables as compared with

the limp, uninviting leaf of the market-place; the fresh egg that could be hatched as compared with the dead cold storage egg; the live seed that could germinate as compared with the crushed and devitalized and degerminated seed in the form of white flour and other products of the mill; stored potatoes, turnips, carrots, etc., that still have enough life to grow leaves if put in the ground, as compared with the same product canned or dehydrated. In certain foods that are useful, although fermented or decomposed, we still have this element of life, in the form of yeasts or the living mites or germs of cheese, sour milk, sauerkraut, etc., or the poi of the south sea islander.

Added to condition of stale or dead food we have cooking, and especially over-cooking, to further impair or destroy the vitamins and alter the chemistry of the food.

In his travels in the Arctic Circle, Stefansson and his men spent nine months on the ice and uninhabited islands. They carried no provisions, depending entirely upon seals, polar bears and caribou killed on the way. In these nine months there was no sickness, until, on the return journey, they arrived at Winter Harbor on Melville Island. This store contained canned milk, dried fruits and vegetables, flour, salt pork, butter, jam, sugar, etc. Some of the men ate largely of this food, which was excellently preserved, although six years old. In a short time they developed severe symptoms of scurvy, but were soon cured when restricted to raw meat. Stefansson, himself, ate only meat, mostly raw, saying that raw meat is always tender and usually of better flavor than when cooked.

The resistance to disease is further lessened because our foods are practically all ground or cooked and softened and predigested so that the teeth and stomach have little to do and soon degenerate so that they cannot manage the food even when it is already masticated and digested. The teeth were made to tear food and bite it into particles small enough to swallow and the stomach's business is to digest it.

In showing that it is possible to maintain health on a single food, it is not my intention to advocate this. The best diet is undoubtedly a mixed diet of fresh foods. The Arabs are among the most perfect races, physically. They are long-lived and infant mortality is very low. They live out of doors and their diet is simple, consisting chiefly of milk, cheese, meat and figs. For the most part the most vigorous and aggressive races have been those who fed largely on milk products and meat. Those living principally on grains and vegetables have been inferior, excepting possibly the Japanese. The Tartars who invaded China lived principally upon their herds. McCarristan, in his paper on "Faulty Food in Relation to Gastro-intestinal Disorders," states that during a nine years' residence in remote districts of India he found that certain tribes were of wonderful physique, wonderfully well preserved and unusually fertile and long-lived. While living among them he never saw a case of cancer and practically no gastro-intestinal disease. The reasons he gives for their unusual longevity and freedom from disease are that the infant is invariably fed at the breast; that the people live on plain, natural foods consisting of milk, eggs, grains, fruits and vegetables; they know nothing of canned or preserved foods, and they had little sugar and practically no alcohol. McCarristan also pointed out vigorously the danger of cooking and preserving foods and converting them into a "dead fuel" mass devoid of vitamins. I wish to be understood as going a step farther than this. Because seeds of plants, grains, etc., are so large a part of our food, I wish to show the importance of preserving the envelope and the germ, unbroken until shortly before using. And in addition, I wish to emphasize most emphatically the importance of freshness and prevention of chemical change, except as before noted, in all foods, and the suicidal folly of such widespread tampering with foods as preserving, pasteurizing, drying, etc.

The difference of opinion among medical men as to whether we eat too much or too little is due to the real value of the food. We may eat too much in bulk and still be under-nourished. Certain elements in food seem to be necessary to health. Although Stefansson and his men maintained health and vigor under unusual exposure and hardship on a diet exclusively of meat as mentioned above; this meat was fat meat. At another period when inland on the mainland they had for a considerable time only very lean meat of caribou that were very thin, having practically no fat in their tissues. Very large quantities of this food failed to satisfy their hunger and although they ate vast amounts they lost in weight and suffered from kidney troubles and edematous limbs. If we eat small quantities of devitalized foods the body may be

greatly under-nourished and non-resistant to disease. McCarristan quotes Hindhede, who said, "the two chief causes of disease and death are food and drink."

The Chinese have little meat and no milk but they eat five times as much fresh vegetables as American people do. Their infants thrive without cows' milk because the Chinese mother nurses her infant from two to three years.

Longevity is checked in many instances in infancy when the infant is artificially fed or even if breast fed when the mother is undernourished because of improper food, lacking in freshness or vitamins. It is well known that the milk of cattle fed on stored and dried foods has less vitamin value than that from cattle fed on fresh and green food. Statistics show that the mortality and incidence of disease in artificially fed children is greater than in breast fed infants even though the mothers may not be properly fed. In childhood and early life the diet frequently consists largely of prepared breakfast foods and cereals which are of little value because they are stale and devitalized and which would fail utterly were it not for the milk or cream used with them.

In providing food for the family it would seem that we should, first of all, provide those foods upon which we can depend best for the necessary elements and vitamins, so long as it is not practical to have all our food in a perfectly fresh state, and the rest of the diet may consist of almost any food that taste or comforts may dictate. The diet should first of all include a liberal supply of milk, vegetables and fruit, the remainder of the diet being made up of meats, fats and sweets. A good rule is to provide a quart of milk a day for each child and a pint a day for each adult.

I have attempted to cover too much in this paper and I wish to mention now briefly a few other factors in health and longevity. One of the most relentless and deterrent factors in longevity is the disease and early loss of teeth and this has become a menace of greatest importance. We have disease and destruction of teeth, because of devitalized food and because we do not use them, as our food requires but little tearing and mastication. There is a lack of vitamins in stale and preserved and over-cooked food. The use of the modern tooth-brush is a producer of disease of the teeth. Most people are unclean about their tooth-brushes. Its use is contrary to the principles of surgical cleanliness. Beginning with a healthy mouth and a new tooth-brush, the bristles pick up particles of decayed food and in brushing the teeth vigorously up and down some of the bristles are pushed up under the gums, depositing their burdens of putrefactive germs where they can be warm and well nourished; the process is repeated every day and between times the brush is hung in a nice warm place where the rest of the bacteria on the brush can multiply. This is one potent factor in the cause of the modern disease of pyorrhea and of dental caries. Either the tooth-brush must be carefully and really sterilized or we must have some arrangement so a new and sterile cleanser can be used each day. People who eat plain, raw, coarse food do not need tooth-brushes.

Another factor of importance in longevity is the modern steam or hot water heated residence and office. Extreme dryness results from the almost universal method of heating and produces colds, catarrhal conditions, deafness and drynesss and itching of the skin. A half hardy plant taken from a greenhouse will not survive this atmosphere more than a couple of weeks and air that would destroy a vigorous plant so quickly must have some deleterious effect on health. Not only is moisture important but freshness as well.

There are many other factors that might be considered, such as the prevalent custom of riding in motor cars and consequent lack of exercise from walking. Most people have fewer hardships and exposures than their ancestors. Some of these hardships may have shortened life as some will contend, but they probably for the most part increased vigor and robustness. The doctor who rides about in a closed car cannot well endure a long, cold ride in an open sleigh.

To sum up, longevity can be promoted by more outdoor exercise, by more moisture in heated dwellings and offices, by improvements in the cleansing and care of the teeth, and by eating more fresh foods, particularly the green leaves of plants, tomatoes, fruits and coarse roots and vegetables. At least a quart of milk (clean, raw milk, if obtainable) a day should be allowed for each person, with a reasonable amount of meats and fats, and it is quite practical for every family to be its own miller and have cereals and breads made from freshly ground grains.

CENTRAL BONE TUMORS AND THEIR DIFFERENTIAL DIAGNOSIS: WITH SPECIAL REFERENCE TO THE LATENT AND UNHEALED BONE CYSTS IN ADULTS

JOSEPH COLT BLOODGOOD, M.D.
Baltimore, Md.

Von Mikulicz was the first to emphasize the clinical fact that the great majority of bone cysts or ostitis fibrosa gave evidence of their presence before eighteen years of age, usually earlier, by pathological fracture, localized swelling, pain or limp. I called attention to this in the early numbers of Progressive Medicine for December and again in the Annals of Surgery for August, 1910. In the Journal of Radiology for March, 1920, in reporting fifty-four cases of benign bone cysts, I reported in detail a few (six) in which the age of onset was over twenty. They may be briefly summarized as follows:

Pathol. No. 5807. Cyst in the trochanter of the femur in a male aged 70. Here there was localized pain and swelling for two years after contusion. When the cyst was explored it had an intact bony shell; the cavity contained clear fluid; there was no connective-tissue lining, and the microscopic section disclosed no evidence of ostitis fibrosa.

Pathol. No. 17871 (See Fig. 2, loco. cit.) was a larger cyst in the trochanter of the femur. Although the patient was twenty-three years of age at the time of operation by Dr. Prince, there has been localized pain in this area for six years, and a slight intermittent limp for six years. This suggests that the age of onset was seventeen. The patient came under observation ten weeks after a trauma which had produced a pathological fracture; this had healed. The lesion in the tronchanter was revealed by an *x*-ray taken at this time. At the operation in 1915 by Dr. Prince there was an intact bony shell, a leathery connective-tissue lining, and clear fluid. The sections from the connective-tissue lining show ostitis fibrosa. There has been no recurrence in this case now seven years since operation.

Pathol. No. 5553. This is an example of the unhealed bone cyst which reaches great dimensions and often involves the epiphysis. This case was illustrated in the Annals of Surgery for August, 1910 (Figs. 9 and 10), and closely resembles the one reproduced in the Journal of Radiology (Fig. 13). According to the statement of the colored woman the swelling in the lower end of the femur had been observed at the age of twenty-seven and had been of five years' duration when first seen in 1898. The leg was amputated in 1904, eleven years after onset, and the specimen shows a thin, bony shell with many partitions (polycystic ostitis fibrosa).

Pathol. No. 20646. This is illustrated in the Journal of Radiology (Fig. 13). It belongs to the group of unhealed bone cysts which have reached great size (we have six examples of this type now). The patient, a colored man, was thirty years of age when the swelling first began, and thirty-five when the *x*-ray was taken. There was also a history of a pathological fracture which has healed. In this case the leg was amputated on the diagnosis of sarcoma, but the patient is free from recurrence eight years later. The specimen which I had the opportunity to examine is gross and microscopically ostitis fibrosa. The bony shell is intact, and there is a connective-tissue lining.

Pathol. No. 8324. This is the third huge bone cyst in the lower end of the femur, reported and illustrated in the Annals of Surgery for August, 1910 (Figs. 16 and 17). The patient, when first seen in 1899, was twenty-oue years of age. There had been pain and swelling in the lower end of the femur six months. At that time sarcoma was diagnosed and amputation advised, but refused. Ten years later, when the tumor had reached very great size, the leg was amputated and the specimen sent to my laboratory.

Undoubtedly these huge bone cysts will now become of historical interest, because few, if any, patients in this country will delay and the patients will not be frightened by the incorrect advice of amputation.

In the Annals of Surgery for August, 1910, I reported and pictured a healed bone cyst of the lower end of the fibula which had been present twenty-two years, but as the age at its onset was before the patient was twenty years of age, it was not discussed in the Journal of Radiology. Nevertheless it belongs to the group to which I wish to call special attention in this paper. If there had been less swelling in this case and if the patient had been unaware of the long duration of the tumor, and if the *x*-ray had not shown complete ossification, the possibility of a central sarcoma would have had to be considered.

In 1916 Dr. Roche, pathologist to St. Vincent's Hospital in Norfolk, Va., sent me a mass of firm, leathery tissue, which had been curetted from the

center of the shaft of the tibia (Pathol. No. 20296). Dr. Roche informed me that the *x*-ray showed an intact bony shell. The female patient was twenty-six years of age and had observed swelling in this region for five years. At the exploratory operation the bony shell was filled with this firm fibrous tissue. It was removed with the curette, and there has been no recurrence after six years.

This case of Dr. Roche belongs to the group of solid ostitis fibrosa of which I reported seven cases in the Journal of Radiology and reproduced an *x*-ray of one (Fig. 89). I reported this group again, with illustrations, in the Southern Medical Journal for December, 1920 (vol. xiii, p. 88).

Dr. Roche's patient was the only one of these seven who at onset was over twenty.

Latent Unhealed Bone Cysts in Adults, Suggesting the Possibility of Central Sarcoma or the Giant-Cell Tumor. Since the publication of the article in the Journal of Radiology, now two years ago, observations similar to that of Dr. Roche have increased in number, and the group allows a very interesting and important discussion of the central bone tumors in adults and their differential diagnosis.

Pathol. No. 27375. The *x*-ray (Fig. 1) was sent to me in January, 1921, by Dr. Donald Guthrie of Sayre, Pa. It shows a central lesion of the shaft of the tibia with an intact bony shell, except for the recent fracture, and a fracture of the fibula which shows no other pathological lesion. This patient was a white female aged forty. There is a history of an injury four weeks ago with evidence of fracture—pain and swelling. The only significant fact in the previous history was that this patient remembered distinctly an injury to this leg in childhood which was followed by pain and limp for some time, and had then given no trouble until the recent trauma. Dr. Guthrie saw this patient four weeks after the injury. He was rather of the opinion that the injury had been slight and suggested a pathological fracture. The leg was swollen and tender in the region of the middle third of the tibia. Dr. Guthrie wrote then as follows: "We have considered four possibilities—gumma, central bone abscess, cyst, and sarcoma. The Wassermann reaction was negative." My advice was as follows: "Explore, curette with the electric cautery, follow this by fifty per cent solution of zinc chloride, and then pure carbolic acid followed by alcohol, and if you have radium and think it is sarcoma, introduce needles."

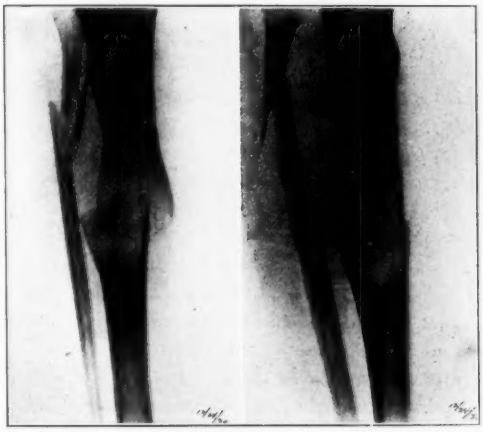

Fig. 1. Path. No. 27375. Latent unhealed bone cyst. Female, age 40. X-ray four weeks after fracture.

Dr. Guthrie wrote me January 17: "I curetted this morning. Apparently it seemed to be a sarcoma, but our frozen sections looked to us more like a myxoma or spindle-cell sarcoma of low malignancy. I sterilized the cavity with carbolic and alcohol and put in 50 mmg. of radium."

I reported to Dr. Guthrie that the tissue which he sent me showed ostitis fibrosa.

Then Dr. Guthrie wrote me as follows: "I am satisfied from reading your reprint and comparing it with my operative findings that the tumor is ostitis fibrosa. There was no connective-tissue lining of the bony shell, nor did the cavity contain any viscid fluid. There was some blood clot present within the cavity due to recent fracture. The gelatinous material which I found in evacuating the cavity was undoubtedly due to small bone cysts in the central area of fibrous tissue."

Apparently, therefore, the bone cavity was filled with an area of fibrous tissue with little cysts in it containing gelatinous material.

Result. It is now more than one year since the operation. The area has ossified, and the patient is well.

I have given this correspondence between Dr. Guthrie and myself in detail, because every surgeon, roentgenologist and pathologist, when confronted with a case of this kind, naturally thinks of sarcoma, and therefore concludes, if it should prove to be sarcoma, that the area of involved bone must be either resected, or amputation performed.

My experience up to date with central lesions of bone in which the bony shell is intact and in which there may or may not be a recent fracture, is that the differential diagnosis between the various possible central pathological lesions can-

not be made from the *x*-ray only. If the patient is fifteen years of age or younger, there is every probability that the lesion is a benign bone cyst. However, myxoma and chondroma are possible. The latter are usually observed in the phalanges, metacarpal and metatarsal bones, and there are a few benign giant-cell tumors in younger individuals. If the patient is over fifteen, a history of a previous injury, as in Dr. Guthrie's case, is suggestive of a latent unhealed bone cyst. The involvement of the epiphysis in the central shadow almost rules out the bone cyst and suggests either the giant-cell tumor or the sarcoma.

The question to be decided is this: What shall be our procedure of attack when an adult comes under observation with an x-ray picture showing the central lesion with an intact bony shell, with or without evidence of a recent fracture?

I can only give the conclusions which are based chiefly upon recent observations and restudy of all the material that I have had the opportunity to investigate.

The possible central lesions, based upon actual experience, are as follows:

The *benign giant-cell tumor* is most common between the ages of twenty and twenty-five. This lesion usually involves the epiphysis and pathological fracture is rare; if it does take place, it heals, but without ossification of the central area. The usual symptoms are the localized pain and the expansion of the bony shell. Extreme pain and tenderness are not often observed, but they may be present.

The *central sarcoma.* This tumor with an intact bony shell is comparatively rare. It also is more apt to involve the epiphysis. The age of onset varies from sixteen to old age. Pathological fracture is a late symptom. I have no evidence that the fracture ever heals, although in the older literature such observations are recorded. As a rule there is extreme pain and great tenderness, also much loss of function of the adjacent joint, without any evidence in the *x*-rays of joint changes to explain this.

It is to be remembered that the possibility of a cure by amputation of a central sarcoma has rarely been accomplished, because of early metastasis to the lungs.

Bone Cysts (Fig. 1). In adults these have occurred with pathological fracture or have been revealed in an *x*-ray taken immediately after a contusion of a bone or joint, or because of localized pain.

Chondroma and Myxoma. These tumors cannot be recognized by their *x*-ray pictures. The central chondroma in the lower end of the femur reported in the Journal of Radiology (Fig. 15, Pathol. No. 22016) was found accidentally in the *x*-rays of numerous joints in a patient who was suffering with pain of many joints. Its pathology was established at the exploratory incision, and the patient is well years after curetting and radium.

The central myxoma of the astragalus reported in the Journal of Radiology (Fig. 28, Pathol. No. 22929) was diagnosed in the *x*-ray as arthritis, and was not revealed until the bony shell was partially removed. This central tumor was curetted *without* thermal or chemical cauterization, and it recurred. The details of this important case have been reported in the Annals of Surgery for December, 1920 (vol. lxii, page 712), and I refer to this article for a complete review of myxomas of bone.

Central chondroma usually involve the phalanges, less frequently the metatarsal or metacarpal bones. A complete review of all of our cases has been made by Mr. Garrett, of the fourth-year medical class of the Johns Hopkins Medical School and will soon be published. Central chondroma of the long pipe bones is rare.

I have never seen *tuberculosis* giving the picture of a central bone lesion in adults, except when other bones have been involved (See Journal of Radiology, Fig. 37, Pathol. No. 23552, and Fig. 38, Pathol. No. 23895. In the latter the outer bony shell is destroyed).

Chronic osteomyelitis of the Brody abscess type I have never seen with an *x*-ray picture at all identical with the central bone lesions just discussed.

In the central giant-cell tumor, sarcoma, chondroma, myxoma, and in the bone cyst there is never evidence in the *x*-ray of new periosteal bone overlying the bony shell which, if present, is suggestive of osteomyelitis or periosteal sarcoma.

Multiple Myeloma. In the older literature this disease came under observation with evident involvement of many bones, cachexia, and Bence-Jones bodies in the urine. Some fifteen years ago I observed with Dr. George Crile of Cleveland a central tumor of the outer half of the clavicle. There had been pain for some months and swelling a few weeks. This *x*-ray was shown by Dr. Crile to many roentgenologists and pathologists. No one made the correct diagnosis. After resection of the clavicle, the pathology of the tumor was suggested in the gross and identified in the section as myeloma. A catheterized specimen obtained im-

mediately after operation gave the Bence-Jones reaction in the urine. In this case not for some weeks after the operation did the *x*-ray show evidence of involvement of the ribs and other bones, and the patient died within a few months. Had the urine been examined for the Bence-Jones bodies before operation, the correct diagnosis would have been made.

From my more recent experience I am inclined to think that this hopeless disease will come more frequently under observation with a single bone involvement.

Metastatic Tumors. We have just reviewed some forty cases. In the majority of instances it was not difficult to get a history of the primary malignant tumor—usually carcinoma. In addition, the *x*-ray revealed the involvement of more than one bone. In a few cases in which the *x*-ray showed but a single bone involvement and in which the evidence of the primary malignant disease was obscure, the *x*-ray was often suggestive of metastatic carcinoma, because of the evidence of some bone formation in the central shadow.

Multiple primary central sarcoma of bone, usually of the endothelial type, is rare. I have not sufficient cases to allow any positive conclusions as to a more certain recognition.

Latent Unhealed Bone Cysts of the Lower End of the Femur.

Pathol. No. 27057. This patient, F. D., aged 33 years, was referred to me by Dr. Joseph Findlay, of Altoona, Pa. Figure 2, an *x*-ray, shows the contrast between the lateral view of the lower ends of the femora. One will observe that the condyles of the left femur are slightly expanded, and mottled, lighter areas are seen up to the junction of the condyle with the shaft. The bony shell is intact, the joint uninvolved. The antero-posterior view (not reproduced here) shows that the changes are chiefly confined to the internal condyle.

When we consider the age of the patient and the position of the shadow indicating disease, one would think of the giant-cell tumor, or a possible early sarcoma. However, the history suggests an old affair. This man's left knee has been flexed about 25 degrees from full extension since he was a boy of fifteen, when he remembers having trouble. Motion in the knee joint was unimpaired up to 25 degrees of full extension. The patient, while at work, sprained his knee, and the *x*-ray was taken twelve days later, simply as a matter of precaution. Every other examination was negative. It was my conclusion that this was an unhealed

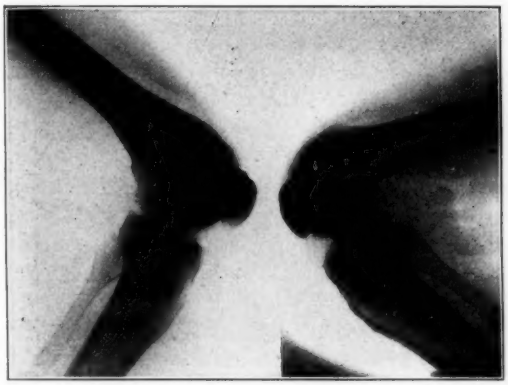

Fig. 2. Path. No. 27057. Latent unhealed bone cyst. Male, age 33. X-ray ten days after injury.

bone cyst. However, it seemed safer to explore. Such an operation hastens the healing of the bone cyst when there is no fracture and, if the central tumor proves to be a benign giant-cell tumor, a chondroma or a myxoma, there never will be a better opportunity for removing the tumor with the curette combined with chemical and thermal cauterization. In all of these groups I have examples of permanent cures. Should the explored tumor prove to be sarcoma, my recent experience indicates that we are justified in attempting a cure by the same method. What evidence I have, suggests that the effects of radium on a central tumor is better if applied into the bone cavity after this type of curetting. More than one year ago my colleague, Dr. Bunts of Cleveland, followed this method in a central tumor of the upper end of the humerus in which the bony shell was intact, and the patient is well today.

Operative Findings. When the periosteum was stripped back from the bony shell of the internal condyle, the outer surface looked normal. We then removed a piece of the cortical bone and exposed a cavity in the internal condyle containing clear fluid, and the bony shell was lined by a white, leathery membrane of connective tissue from 1 to 2 cm. in thickness. Beyond the connective-tissue lining there was evidence of new bone formation. The gross pathology, therefore, was identical with the numerous bone cysts in children under fifteen years of age which I have recorded in previous communications. The microscopic section showed ostitis fibrosa.

The closed wound healed, and this patient now, more than one year since operation, has good function and almost full extension.

Fig. 3. Path. No. 29461. Metastatic hypernephroma. Single lesion. Clinical diagnosis multiple myeloma.

Latent Unhealed Bone Cyst of the Lower End of the Femur Diagnosed Sarcoma and Subjected to Amputation Through the Middle Third of the Femur.

Pathol. No. 19179. This case was reported by me in the Journal of Radiology for March, 1920 (Figs. 23 and 24), as an example of a cured case of central sarcoma. It has been registered with Codman of Boston and accepted. I have restudied this case most carefully recently with the conclusion that it is not sarcoma, but ostitis fibrosa. Ewing, in writing his report, accepted it as a spindle-cell sarcoma, but, nevertheless, in describing it, he writes that it reminds him of a case of ostitis fibrosa which we had studied together and in which his first diagnosis was sarcoma and later agreed with me that it was ostitis fibrosa. This observation was also published in the Journal of Radiology (Fig. 89, Pathol. No. 25656). Fortunately, in this instance, the central tumor with pathological fracture in a boy aged sixteen was simply curetted, and the patient is well with good function more than two years since operation.

The *x*-ray in my case, in which I diagnosed sarcoma and amputated, shows an unhealed fracture between the shaft and the condyles of the femur with little or no callus formation, and a central tumor with a thin, intact, bony shell. The epiphysis was involved, which is unusual in ostitis fibrosa, but present as noted in the previous cases.

This patient, aged about thirty, sustained a fracture of the lower end of the femur; the fracture did not heal; it was explored and a piece sent to me for diagnosis. I looked upon it as a spindle-cell sarcoma and advised amputation. The gross pathology is illustrated in the Journal of Radiology (Fig. 25). There was a central cavity filled with fluid, then a thick mass of tissue which somewhat resembled fibrosarcoma or ostitis fibrosa; then a bony shell. There was very little evidence of new bone formation in the area of the fracture. This patient is well now more than five years since the amputation.

This case illustrates how frequently a benign lesion may be mistaken by individuals of the largest experience and who have given special study to the lesion in question. It also illustrates the importance of submitting our so-called cured cases of malignant disease to a number of pathologists.

Multiple Myeloma Coming Under Observation With Involvement of a Single Bone and Without Bence-Jones Bodies in the Urine.

Pathol. No. 29461. Fig. 3. This patient has been carefully observed by Dr. M. A. Bachman of McKeesport, Pa., and he has sent me a complete history and a series of *x*-rays.

The patient, a white female, aged sixty-five, came under his observation twelve weeks after a fracture of the shaft of the humerus from a slight injury. This was about January 7, 1922. *X*-rays of the entire skeleton were negative of other bone lesions; there were no Bence-Jones bodies in the urine, and all other examinations were also negative. The slight fracture healed, but no other change showed in the *x*-ray, one of which, taken after the fracture had healed, is illustrated here. The only suggestive evidence was that the patient was not well. She had more pain in the arm after the healing of the fracture than should be expected; her appetite was poor.

Now, three months after the first observation and about six months after the fracture, Dr. Bachman reports Bence-Jones bodies in the urine.

As far as my evidence goes this is almost positive of multiple myeloma.

Note: April 14, 1922. Dr. Bachman has just sent me the *x*-ray shown in Figure 4. When compared with Figure 3, it shows expansion and be-

ginning destruction of the bony shell. The patient is suffering great pain in the arm. The urine is filled with albumin, casts and Bence-Jones bodies. The patient shows cachexia, but *x*-rays of the entire skeleton as yet show no other lesion.

Sept. 1922. In this case, Path. No. 29461, in which the diagnosis was made of multiple myeloma on the presence of Bence-Jones bodies in the urine, the arm was amputated and the sections of the central tumor revealed a metastatic hypernephroma. This observation shows that metastatic tumors may be associated with Bence-Jones bodies in the urine.

Recently I have seen with Codman an *x*-ray of the humerus so closely resembling Figure 3 that I remarked to Codman, "This may be a metastatic hypernephroma." The guess was correct.

When Is Exploration Justifiable in Central Bone Lesions With Intact Shell, With or Without Recent Fracture? The rarity of a permanent cure after amputation for periosteal or central sarcoma of bone as first emphasized by me in the Journal of Radiology for March, 1920, and confirmed by Codman in his Registry of Bone Tumors, has created a reaction in the minds of the profession throughout the country and has led to treatment with radium or the *x*-rays, without operation.

I have carefully restudied all my evidence, and I believe this changed attitude is largely incorrect.

Fig. 4. Path. No. 29461. Metastatic hypernephroma. This x-ray was taken a few months after Figure 3 and shows beginning of destruction of bone shell.

I will confine my remarks here to central lesions in patients over fifteen years of age. First, I have demonstrated in this paper, confirming my remarks in the Journal of Radiology, that unhealed bone cysts may be unexpectedly revealed by the *x*-ray in adults. For such a lesion, *x*-ray or radium treatment is unnecessary. Only an exploration will reveal the benign lesion and simple curetting is sufficient.

For the central giant-cell tumor most common between the ages of twenty-five and thirty-five, radium, from my experience, is *not* specific. From personal communications and from the literature, the impression has been that radium alone will cure the giant-cell tumor. If my evidence is correct, radium does not affect the giant-cell tumor when the bony shell is intact even when radium needles are introduced.

It has been established that the giant-cell tumor does not recur if properly curetted with thermal or chemical cauterization. Delay in thus curetting may be associated with further destruction of the bony shell. The functional results after curetting depend upon the preservation of a bony shell. Nothing can be gained by delay.

This exploration may reveal a rare chondroma, or a myxoma, and the evidence is in favor that thermal and chemical cauterization with curetting offers more than radium or *x*-ray treatment.

At this exploration the rare and rarely cured central sarcoma may be revealed. What should be done in a case of this kind? From my recent experience, it would seem justifiable to curette with the cautery followed by chemical disinfection and the introduction of radium into the bone cavity. This was done by Dr. Bunts of Cleveland in the following case.

Pathol. No. 26792. The patient was referred to me in September, 1920, by Dr. Bunts. The *x*-ray showed a central lesion of the upper end of the humerus completely involving the epiphysis, with the bony shell intact. The age of the patient—sixteen—favored a bone cyst; the involvement of the epiphysis and the age favored a giant-cell tumor. The intense local pain and tenderness and the loss of joint function (due to pain) without evidence in the *x*-ray of fracture or joint involvement, favored sarcoma, which at that time I had never seen at this age. I advised Dr. Bunts to explore, and if it proved to be a bone cyst to curette; if a giant-cell tumor to curette with thermal and chemical disinfection; if sarcoma to

resect and transplant bone. The father, however, would not consent to the latter. When Dr. Bunts explored, he found a good bone shell with no evidence of infiltration. He curetted with chemical and thermal cauterization, introduced radium, left the wound open, continued radium and *x*-ray treatment with Coley's serum, and he has just written me (March, 1922) one year and five months after operation, that the boy is apparently well, and the wound has healed; there is some restriction of joint motion; the patient has gained thirty pounds in weight. September 1922, well.

It seems to me that Dr. Bunts has established a justifiable procedure which seems to offer as much as amputation or resection when the bony shell is intact.

In going over the cured cases of sarcoma in the Mayo clinic with Drs. McCarthy, Meyerding, and Brothers, we found one of their patients well seven years after amputation, in which the first operation had been curetting. The tumor was central in the lower end of the femur; the curetting was not as thorough as in Bunts' case; nor was there any *x*-ray, radium or Coley serum after treatment. The amputation was one year after the curetting.

What to Do in Case of Doubt. When one explores a central tumor with an intact bony shell and is unable to positively rule out sarcoma the treatment should be the most thorough destruction with the cautery, with swabbing the bone cavity with pure carbolic and alcohol and 50 per cent chloride of zinc, followed by the introduction of radium; this to be followed by postoperative *x*-ray and radium treatment.

Bone cavities have been swabbed with pure carbolic and alcohol and packed with 50 per cent chloride of zinc gauze without harm for years. Hinds, of London, curetted a giant-cell tumor filling the lower end of the femur in 1895; he packed the wound with zinc chloride gauze. This patient is alive in 1922, twenty-seven years later; the limb has good function, and the *x*-ray shows bone formation; the wound has healed. I first curetted a giant-cell tumor of the upper end of the tibia in 1902, twenty years ago; I used only pure carbolic and alcohol for chemical cauterization.

Recently I have burned the bony shell with the electric cautery for the giant-cell tumor and the chondroma. This has not affected the healing of the wound, nor the ossification of the cavity.

This evidence in favor of exploring a central tumor with an intact bony shell will be repeated in greater detail in another paper now in course of preparation in which I will report all the central tumors of the upper end of the humerus. I have selected this group because I find an example of every type of tumor.

This paper is written chiefly to emphasize the occurrence of the unhealed or latent bone cyst in adults which can rarely, if ever, be distinguished from other central tumors, and I am inclined to think the number of such cases will increase, because *x*-rays are now more frequently taken when the patient complains of slight pain or loss of function.

To repeat in conclusion, the most common central tumor in bone with an intact bony shell, with or without fracture, is the giant-cell tumor. I am inclined to think that the next most common will prove to be the unhealed or latent bone cyst; then, perhaps the condroma and a few myomas; and, the most rare, the primary central sarcoma, the metastatic carcinoma, and the multiple myeloma involving on bone.

Radium treatment is unnecessary for the bone cyst. Proper curetting without radium is sufficient for the giant-cell tumor. If the bony shell is intact it seems justifiable, in the central sarcoma, to try first thermal and chemical destruction with radium, as employed by Dr. Bunts.

Indications for Resection. In central tumors with intact bony shell the functional result is so perfect after resection that it seems unnecessary even to explore. This is true in the lower end of the ulna and the upper end of the fibula. I have discussed this in the Annals of Surgery for April 1919 and in the Journal of Radiology for March 1920.

Note: Since this paper was written other examples of the latent and unhealed bone cyst in adults have been observed. And a number of cases of central benign giant cell tumor have been subjected to curretting with the electric cautery and chemical cauterization. *X*-ray studies of these and former cases receiving the same treatment demonstrates that this more thorough curretting with thermal and chemical cauterization does not interfere with wound healing or ossification. As yet no further opportunity has arisen to test this method in the rare central sarcoma with intact bone shell.

I have noted the change of diagnosis in the case illustrated in Figure 3.

The patient operated on by Dr. Bunts of Cleveland reported in this paper remains well.

The method of attack in periosteal bone lesions is different and will have to be discussed in another communication.

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R. E. Farr, M.D. Minneapolis
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L. B. Wilson, M.D. Rochester
F. L. Adair, M.D. Minneapolis
J. T. Christison, M.D., St. Paul

EDITORIAL OFFICE
CARL B. DRAKE, M.D., Editor
403 Central Bank Bldg., St. Paul

BUSINESS MANAGER
J. R. Bruce, 403 Central Bank Bldg., Saint Paul
Telephone: Cedar 1683
210 Commercial Bldg., Minneapolis
Telephone: Atlantic 2716

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EDITORIAL

Minnesota State Meeting

Elsewhere in this issue appear the announcements and preliminary program of our annual meeting. It is safe to predict that with the increase of 116 since last year in our membership, the Minneapolis meeting will be the largest in the history of the Association. October seems to be the popular time of the year for medical conventions but our dates do not conflict with those of the Tri-State Medical Association, the Mississippi Valley Medical Association, nor the Mississippi Valley Tuberculosis Conference, all of which convene in October and notices of which appear in this issue.

There is a feeling commonly expressed that we are being overloaded with medical meetings. There is a very definite danger that we may acquire such a diversity of society interests that our county and state organizations in time may suffer. There is no indication of any such state of affairs in connection with the forthcoming state meeting. A greater number of addresses will be read this year than ever before and the time has undoubtedly come for the consideration of the desirability of dividing our meetings into more than the two sections—Medical and Surgical.

The medical section this year is restricting each participant to the reading of a ten-minute abstract and discussions will follow the presentation of all the abstracts at each morning or afternoon session. This procedure has been necessary to accommodate the large number of medical papers. Next year the situation is likely to become more acute and a thorough consideration of the question of further sectional division should be taken up at the coming meeting.

Graduate Medicine in London

To give a brief and proper evaluation of London postgraduate medical opportunities is indeed difficult. From casual contact most overseas visitors are apt to magnify the difficulties encountered and bewail the lack of centralization and coordination found. In this respect conditions in Chicago and New York with a great abundance of clinical material are no different. Vienna has long been the mecca, particularly of American physicians seeking study abroad; there, the material was available, routine courses were provided, and men conversant with the best and most fundamental knowledge of their specialities were willing to give time and instruction to their classes. It should be possible, in English speaking countries, to provide similar opportunities. To bring this about it is not only necessary that certain decisive steps be taken locally, but in addition, the visiting physicians must be willing to cooperate and show their appreciation for what is being done.

In this line, every visiting medical student going to England should get in touch with the following:

1. The "American University Union" (London Branch) at 50 Russel Square, W. C. Dr. G. E. MacLean is Director of the British Division and has a well equipped and central office acting as a general buffer between the conservative Britons and the more or less eager Americans desiring action and opportunity. Dr. MacLean is well known in Minnesota, where he was the predecessor in the English Department of Dr. Richard Burton, and later was chancellor at both Nebraska and Iowa Universities respectively.

2. The American Union is working in close association with another very important body known as "The Fellowship of Medicine," quartered at No. 1 Winpole St., in the beautiful home of "The Royal Society of Medicine." Some credit is due the late Sir William Osler for assisting and developing this very useful fellowship. He lent his judicious and discerning faculties to an attempt to make available for postgraduate medical instruction some of the

vast material assembled in the various London hospitals and dispensaries. Any inquiry directed to the secretary, Miss M. A. Wills, will be promptly acknowledged. They publish a bulletin at regular intervals giving a full list of courses, the hours, dates, and locations. It would be unfair to infer that this Fellowship or Bureau is fully developed and functioning now as well as the old A. M. A. of Vienna. It is too much to expect that an organization so recently in the field and developed during a period of postbellum uncertainties that has greatly taxed not only the London hospitals, but their staffs as well, should attain full stature without opposition and difficulties. However, now is the time to give it support and this splendid beginning merits our unqualified approval. Those visiting London should do all they can to conform to its regulations and associate themselves with the Fellowship.

The many well known hospitals of London are great landmarks in the advancement of medical science and nothing could be more inspiring than a visit with particular attention to their historical development, their teaching associations, and their wonderful museums. I wish to call attention particularly, however, to the peculiarly unique special hospitals of which London has an unusual number: The Royal Westminster Ophthalmic Hospital; St. Mark's Hospital for Diseases of the Rectum; Paddington Green Children's Hospital; Hospital for Epilepsy and Paralysis; the well known Brompton Tuberculosis and Chest Hospital; but most of all from my personal knowledge and contact must I mention and allude to the National Hospital for Diseases of the Heart, at West Moreland St., W. I.

It is very doubtful whether there is a larger assemblage of cardio-vascular material, better studied or controlled anywhere in the world than in this little institution hidden away in a building with little to differentiate it from its sober surroundings. There are only about fifty bed-patients; but these are chosen from a perfectly huge out-patient service, which in turn is largely referred from other hospitals and dispensaries or from private practitioners. During and since the war they have had much to do with the study of recruits and the disabled. Furthermore, anyone interested in the social aspects of medicine as practiced in England today can glean much from witnessing the great crowds that daily assemble to be checked off and directed, both medically and sociologically. In the time available the men succeed in doing a very great deal for these heart cases and assist in dispelling the idea that the English cannot "speed up"; a good history, a routine physical examination, and usually an electrocardiogram and fluoroscopy is done and accomplished all within a comparatively few minutes. This comes from careful organization and from long contact with the immediate propositions involved in cardiac disease. It is a strong argument in favor of this type of concentrated specialism. On different days the service is in charge of different men. One need not expect among them either uniformity of opinion or method. This furnishes a measure of wholesome diversity, since on the whole they arrive at about the same ultimate opinion as to the patient's capabilities. In this respect one will rarely see better judgment exemplified in the direction of people already inclined to an introspective estimation of their own difficulties; and indeed the problems involved in the estimation of disturbances in cardiac rhythm and functions are difficult enough. Goodall remarked that after some twenty years of intensive study as a teacher of physiology and keen attention particularly to the heart he entered this service to find that the daily problems confronting them were so novel and baffling as to render him only conscious of his inadequacies. In this frank admission, perhaps, can be seen the stimulus which has induced these men to so carefully build up a physiological estimation of the cardio-vascular system and to carefully tabulate and correlate their data. So now after some years their fund of material and knowledge is a veritable medical treasury. Particularly is it so for those whose experience and personal contact have shown them the applicability of this storehouse. In a word, English medicine deserves great credit for properly directing a study and interest in physiology in contrast to intensive investigation of anatomical *mechanical defects.* Men thoroughly conversant with their problems rarely make the elucidation thereof cumbersome and complex; it is a pleasure, therefore, to find the electrocardiograph in daily use, an efficient and precise instrument to assist the physician in determining the extent of pathology and not simply a further mechanical device for throwing out a smoke screen in the Inner Sanctum.

If the teaching opportunities as a whole offered by the Fellowship can be judged from those given in the National Heart Hospital, then indeed London can soon assume a very high place in graduate medical instruction.

E. L. T.

The Gorgas Memorial

Plans are under way for the establishment of a fitting memorial for the late Major-General William C. Gorgas. An institute with an endowment of six and a half million dollars to be located at Panama City and to be known as the Gorgas Memorial Institute of Tropical and Preventive Medicine is proposed in conjunction with which there is to be established in Tuscaloosa, Ala., the Gorgas School of Sanitation for the purpose of training county health workers, sanitary engineers and public health nurses especially for work in the south. The institute at Panama will be devoted to the study of tropical and infectious diseases with a hospital, laboratories, departments for research and all other facilities required for this sort of work and will continue the type of work developed by General Gorgas and so urgently in need of further study and application.

The stimulating suggestion was made by President Porras of Panama and as a starter the Panama government has donated the large Santo Thomas Hospital and the location for the proposed institute.

The project should be of international interest and donations will doubtless be forthcoming from all countries particularly in the western hemisphere. The tropical states will be most benefited by such an institute but our southern states should be particularly interested. The benefits to be derived by even our northern states are not to be minimized considering the modern ease of transportation of individuals and infectious diseases.

The central committee of this project is headed by Admiral Braisted, ex-president of the American Medical Association, and the Board of Trustees of the A. M. A. has appointed the following committee to act for the Association: Dr. George E. de Schweinitz, Philadelphia; Dr. Charles W. Richardson, Washington; and Dr. Fred B. Lund, Boston.

There should be a hearty response from the medical profession, both individually and through our various organizations, to this appeal to help perpetrate the memory of one of our profession in such a fitting way. Checks should be drawn to the order of the "Gorgas Fund" and should be mailed to the American Medical Association, 535 North Dearborn Street, Chicago.

Osteopathy and Chiropractic

We are reproducing for the benefit of our readers the official report of the Council of Massachusetts Medical Society received by that society at its last annual meeting. This report gives, we believe, an unbiased opinion of the status of these two so-called cults which, as is shown in the report, are not cults but therapeutic methods based on unproved theories.

REPORT OF THE COMMITTEE TO INVESTIGATE THE MEDICAL CULTS

Your committee, which was appointed in June, 1921, to study osteopathy and chiropractic, submits the following report in which the subjects of osteopathy and chiropractic will be taken up separately. As the committee found that there was a general lack of appreciation among the members of the medical profession in regard to just what these medical cults signified, some space will be devoted to a description of them.

OSTEOPATHY

Osteopathy was founded by a doctor of medicine. It depends upon a theory. It is not clear to the committee whether the theory was evolved before some results were obtained from treatment or after. The theory, as advanced by Dr. Still, the founder, consists in the belief that the human body contains all of the elements necessary for health, and if the circulation within the body is normal, these elements will maintain health. The impairment of circulation, so that these elements contained in the body cannot be properly supplied to all parts, is the cause of disease. This impairment of the circulation is produced by the action of the vasomotor nerves. These in turn are affected by direct pressure from bones, muscles or ligaments in the region of the spine or by reflex irritation from disturbance in visceral organs or other parts of the body.

In the later books on osteopathy the term "inhibition" appears. Inhibition apparently is the relief of pain and spasm by the application of steady pressure. It is not clear whether this was included in the original theory or added afterwards. According to Still's original theory there is no need for the vast amount of medical knowledge which has been accumulated for centuries, because it is only necessary to discover the lesion which is causing the disturbance in the circulation, correct that and health will result.

Your committee was unable to find any experimental or other scientific evidence in support of this theory, although in recent years an institute for research has been established in California for osteopathic problems. Your committee naturally considers it absurd to throw over all the accumulation of facts that has been produced by medical science for a theory which is unsupported by experimental work or other convincing facts. Your committee further feels that the osteopaths themselves, at the present time, do not feel that this theory should replace all medical knowledge. For it is quite striking to note in the osteopathic literature that the more recent the book, the more use is made of general medical knowledge so far as diagnosis is concerned and the employment of generally recog-

nized therapeutic agents other than drugs. Also it is evident from conversation with members of the osteopathic profession that the rigid interpretation of the old theory is being, in part at least, abandoned.

The question arises, therefore, what is osteopathy today? Osteopathy today is really a therapeutic agent which is used for the treatment of any and all pathologic conditions. That this contention as to the real nature of osteopathy today is correct seems justifiable from the fact that the osteopathic books speak of osteopathy as a therapeutic agent which is contrasted chiefly with one of the therapeutic agents used in general medicine, namely, drugs. Furthermore, in the State of Massachusetts the General Court has legislated that osteopaths and all others practicing the healing art must fulfil the same requirements in regard to general medical knowledge as regular physicians who desire a license to practice medicine, and having so done they may use any therapeutic agent they wish. Your committee therefore feels justified in looking upon osteopathy as a therapeutic agent and has endeavored to find out the value of this therapeutic agent.

The osteopathic treatment consists in the relief of the so-called osteopathic lesion which is claimed to be present in all diseases. It is important, therefore, to understand just what is meant by the so-called osteopathic lesion. Unfortunately, one forms the opinion from reading that the osteopaths vary somewhat in their conception of the osteopathic lesion, but in general they agree that the lesion consists in certain abnormalities situated chiefly in the muscles, ligaments or joints along the spine. These abnormalities consist of a slight displacement of articular surfaces which may or may not be demonstrable by inspection, palpation or *x*-ray, a localized tenderness, and a spasm of muscles. They claim that this combination of abnormalities or osteopathic lesion should be found at some point along the spine in practically all diseases. The site of the lesion varies with the localization of the disease. Although they claim that there is some specificity of the lesion so far as location is concerned, there is no specificity of the lesion for different diseases in the same organ. In other words, tumor of the kidney, nephritis, tuberculosis of the kidney and pyelonephritis would all present a similar osteopathic lesion along the spine.

Your committee had an opportunity to see a member of that profession look for the osteopathic lesion in various disorders. In some of them he was able to demonstrate a so-called osteopathic lesion, in others he was not. It seems, therefore, to your committee that the presence of this osteopathic lesion in all diseases is not an established fact. The presence or absence of this so-called lesion in disease could be definitely settled, it seemed to your committee, by a careful study of cases by a suitable group of doctors in conjunction with those trained in detecting the osteopathic lesion.

Assuming for the moment that an osteopathic lesion may be present in all disease, what is the method of treatment which is the therapeutic agent peculiar to the osteopathic physician? He endeavors by manipulation and with the assistance of inhibition to reduce the lesion, namely, to correct displacement of the bony surfaces, if any exist, and to relax the muscular spasm and remove the point of tenderness. Granting for the moment that an osteopathic lesion is present and that it may be reduced, both of which presumptions are still unproven, there is no satisfactory proof obtainable that in the great mass of self-limited acute infectious, toxic diseases and incurable chronic disorders this treatment affects the course of the disease. So far as your committee can find, no careful comparative studies have been made on the value of osteopathic treatment in addition to other procedures. Before any claim is justified for the value of this treatment a careful study of a large group of cases should be made in which the usual therapeutic procedures are tried on half the patients and the same procedures plus the osteopathic procedures on the other half.

It became obvious, however, to your committee during their studies that in a group of less well defined conditions, such as lame and painful backs from various causes, etc., the osteopathic treatment afforded marked relief. In this group of cases comparative studies again have not been made, but one is forced to the conclusion, from the great weight of evidence of relief in isolated cases, that benefit is frequently derived by these manipulations. In other instances osteopathic manipulations have resulted in harm to the patient. Your committee endeavored to figure out what actually happens in these cases in which relief is obtained, for the osteopaths only have a theory as to the cause of the relief, and this theory varies among different osteopaths. A regular physician who has made considerable study of this subject feels that the various theories of the osteopaths do not quite account for the results obtained and offers a different one of his own. Your committee has not arrived at a satisfactory conclusion as to the reason for the beneficial results and feels that at present the reasons are not known. It feels that careful study should be conducted by properly trained medical investigators in order to arrive at the truth in regard to these results.

Your committee in conclusion feels, therefore, that the therapeutic agent known as osteopathy has not been proved to be of any value in the diseases of known pathology. It has been shown to be of undoubted benefit in certain conditions of unknown pathology. It is also well known that it can do harm in various conditions, especially when applied without a general medical knowledge. Your committee urges the Society, therefore, to join with other medical research forces in the State in an effort to clear up the points mentioned above which have not been, as yet, definitely settled in regard to osteopathy, and to find out in what way osteopathy helps in those very few conditions in which it seems to be of value, in order that this therapeutic agent may be used intelligently by the profession at large. For this purpose funds should be appropriated.

CHIROPRACTIC

Chiropractic apparently was founded by a layman and, like osteopathy, depends upon a theory. This theory consists in the claim that all disease results from pressure upon nerves as they emerge from the spinal canal. This pressure is caused by abnormal position of the vertebræ. The chiropractor does not need the accumulated knowledge in regard to disease because if pressure is relieved from the nerve roots, health will result irrespective of the type

of the disease. One of their leaders, Palmer, says in his writings that he does not want a diagnosis.

In support of this theory your committee has been unable to find any experimental or other sound evidence, either in the chiropractic literature or elsewhere. To substitute this unproved theory for the accumulation of medical knowledge is, of course, absurd.

Your committee is not convinced that the leaders in chiropractic are sincere and feels that the whole subject may be one gigantic fraud in which a certain number of sincere individuals have been carried along. The only possible value that your committee can find in chiropractic is that it may offer a new therapeutic agent which will be of value in certain cases, and therefore your committee has endeavored to investigate the method of procedure used by the chiropractors and study their results.

The procedure of the chiropractor is to examine the spine by palpation and *x*-rays in order to locate the subluxations or other malpositions of the vertebræ. In addition attempt is made to trace the course of nerves over the trunk, head and extremities for tender points. The chiropractor claims that abnormal positions of certain vertebræ, with resulting pressure on certain nerves, account for the various disorders known to medicine. Their treatment consists in an attempt to reduce by manipulation these subluxations or malpositions of the vertebræ.

Your committee can find from the chiropractic literature or elsewhere no sufficient evidence that this form of treatment is of any value in disease of recognized pathology. Individual reports on the results of chiropractic treatment in this community are so few that your committee could not find any evidence that this type of treatment is of value in those ill-defined disorders of unknown pathology in which osteopathy is at times of benefit. The tremendous growth of the cult throughout the United States is the one reason for wondering whether in certain ill-defined conditions chiropractic treatment may be of comfort, if not of benefit, to the patients. This point, however, is not proved at the present time and it is quite probable that if any benefit is derived from the use of chiropractic treatment it is the result of suggestion rather than the treatment.

Your committee feels, therefore, in regard to chiropractic that at the most it can only be looked upon as a therapeutic agent in the group of physical therapeutic agents. Your committee feels certain that to employ such a therapeutic agent without general medical knowledge is a great danger to the public health. Your committee urges that the Society include in its investigation of the benefits derived from osteopathy the claims of the chiropractors in order to see if it offers a therapeutic agent worthy of consideration by the medical profession.

Among the various books and pamphlets consulted are the following:

OSTEOPATHY

Burns, L. J.: Basic principles of Osteopathy.
Clark, M. E.: Applied Anatomy.
McConnell and Teall: Practice of Osteopathy.
Riggs: Manual of Osteopathic Manipulation and Treatment.
Still, A. T.: Research Institute, Bulletin No. 1.
Research Institute, Bulletin No. 2.
Research Institute, Bulletin No. 4.
Research Institute, Bulletin No. 5.
Taskar, D. L.: Principles of Osteopathy.
Woodall, P. H.: Manual of Osteopathic Gynecology.

CHIROPRACTIC

Encyclopedia Americana.
Firth, J. M.: Chiropractic Symptomatology.
Loban, J. M.: Technique and Practice of Chiropractic.
McNamara, R. E.: Chiropractic.
Palmer, B. J.: Science of Chiropractic: Vols. II, III, and VI.
Sterns: Methods of Examination.
Vedder, H. E.: Chiropractic Physiology.

RECOMMENDATIONS

Your committee appointed to investigate Osteopathy and Chiropractic during its work became convinced that the Society owes a duty to the general public in regard to enlightening the public how to handle the growth of medical cults, and therefore has taken the liberty to present to you the following suggestions with the hope that some action will be taken upon them if you see fit.

Your committee feels that the proper way to handle the cult problem, which will always continue to crop up, is to avoid intolerance against the practitioners of these methods, and to educate the public, and especially the legislators, that these cults are in reality simply therapeutic agents. It should then be made clear that all those using any therapeutic agent in the care of the sick should only do so provided that they possess an adequate general medical knowledge, based upon a uniform examination such as the Massachusetts law calls for at present. The Massachusetts Medical Society should always be active in trying to raise the standards of this examination.

CHANNING FROTHINGHAM, *Chairman.*
GEORGE C. BADGER.
JAMES W. SEVER.

MISCELLANEOUS

FOURTH OF JULY ADDRESS*

By Prof. Adolf Lorenz

Vienna

Allow me to introduce myself as a man who has been asked many hundred times, "How do you like America?" and who always has answered, "I like America very much, indeed." I consider the celebration of the fourth of July, 1922, in Baden as a landmark for times to come and I sincerely hope that the line of celebrations will never again be broken.

It is a long time since I attended the last fourth of July celebrated by Americans in this country. It seems to me a century—at least one should think that a whole century would scarcely be long enough to bring about what five years of cruel warfare have done to the welfare and civilization of this world racked to its foundations. To restore these foundations it is absolutely useless to inquire after the final causes of the terrible catastrophe by which mankind has been overtaken, in order to lick the pretended culprit.

Let us rather humbly confess that, in spite of all civilization, man is and will be a fighting animal, not better, most likely worse, than the other creatures on God's earth. But even fighting animals know reconciliation. At least in this respect, the fighting animal man should be better than the fighting beasts.

One way or another, the war must be forgotten in our hearts, for it is over. Let us consider it as a hurricane, a thunderstorm which is bound to come once in a while—even in spite of the Washington conference for limitation of armament—to clear up a hazy atmosphere. Has it been our duty to fight in war time, it is not less our duty to promote conciliation after the war has come to an end. The world simply can't go on quarreling or there would be no victors but only defeated in the end, which, by the way, seems to be the case anyhow.

In this conciliatory work, the medical profession, in my opinion, has to perform a leading part. The medical profession, which is or should be as cosmopolitan as human sufferings doubtless are, should give an example of reconciliation to the people.

The medical profession is bound to acknowledge that the world-saving remedy is a healing dose of "forgetting" and a stimulating, vivifying dose of "forgiving." The medical profession should ceaselessly fight only one war—the war against the diseases of humanity, the common foe of all the nations. This war should be an ennobled war consisting of the keen competition to excel in endeavors to benefit suffering mankind.

To fight this war successfully, you have again come to old Vienna. She has ceased to be a political metropolis, but it will be her pride and exertion to remain a metropolis of art and science, especially of medical science, in all the future. Art and science, refined industry and the wonderful geographical situation, by which she is destined to remain in the future, as she was in the past, the commercial mediator between West and East, are the four items by which the rise of old Vienna out of her ashes is guaranteed. But at the present time Vienna is very badly off.

I congratulate you on having ventured to come to our impoverished city in spite of fear to go to bed with an empty stomach for you well know that an empty stomach does not make you feel any better even if the brain has been filled to the brim with ethereal scientific food. The same, I congratulate the ladies, who have ventured to come with you, guarding your health and good conduct. Luckily the American dollar has settled the stomach question for you. But do not tell at home that that part of the Viennese people to whom the old glory of Vienna as a metropolis of science and art is due—I mean the middle class of people, especially the brain workers—are living luxuriously. Such a tale would be erroneous from the beginning to the end. Whoever has come in touch with this class of the people, and you have, knows better. The value of the Austrian crown tells the story. To owners of Austrian crowns prices are prohibitive, but we won't despair.

I take this first celebration of the fourth of July after the war as a good omen in assuming that old Vienna, though she may at present have lost part of her external and all of her internal beauty, will again be what she was in pre-war times, the holy shrine of medical research and teaching, attracting medical pilgrims from all parts of the world, especially America.

I hope that you will not regret to have come to us as the first pioneers! I hope you will tell at home that our arms are open to welcome you in our wretched country and that we did our best to make you feel at home with us. I am sure that you celebrate this fourth of July with the same elated hearts as if you celebrated it at home instead of in a foreign country.

Although you have no crackers, no guns, no powder nor other implements to make noise with, I envy you and all Americans such celebrations. Your independence brought home from the battlefields meant to the American people to do, and to leave undone, what they themselves thought best for themselves. Compare with it our independence also brought home from the battlefields! It is an independence imposed, enforced upon us to do or to leave undone, not what we, ourselves, but what other people

*Delivered at the July 4th celebration at Baden, 1922.

think best that we should do or leave undone. Our independence is the liberty—to die. May God Almighty grant our wretched country a time when it will celebrate its independence in the American sense!

Ladies and gentlemen, excuse this excursion, but it imperatively imposed itself upon me at this occasion. Finishing my remarks, let me hail you ladies and gentlemen as missionaries of reconciliation and peace when you return to your country and let me join you as your faithful collaborator when I shall pay my next visit to your shores next fall.

I have to add something! When I said in the introduction that I liked America very much, indeed, I have to make a restriction in the end. To tell the truth, I did not like at all the American climate, whether in the East or in the West, whether in your mountains or on your plains. The American climate affected my health very badly when I had to stand it last winter. It did not affect my health at all when I visited America nearly twenty years ago. At that time it still had a healthful climate. In the meantime it must have changed for the worse. The New York climate is especially bad, as you know. It nearly killed me last winter. In my plight, I consulted a famous physician. His diagnosis was nervous breakdown, due to overwork. I was in despair. At last, I remembered that I am a specialist, myself, quite especially of the hip joint. You are aware of the fact that specialists are used to look at the world through their own eye-glasses. So did I. I guessed that something must be the matter with my hip joint, which seemed to creak a little when in motion. I resolved at once to apply a cataplasm in the shape of a flat bottle of whiskey, which I put in my hip pocket. From then on I got better, day by day. The vapors of the whiskey not only benefited the hip joints but my whole system. They changed the American climate, which obviously was too dry for me. I felt very proud to have found such an effective remedy to help all those who suffered from the dryness of the American climate. I even thought of having the whiskey cataplasm of the hip joint patented but I learned very soon that I had come too late, that many thousand Americans, suffering from the dry climate, carry a cataplasm in the form of a flat bottle of whiskey on the hip. But I will improve. The next time I will try to be and to remain a law-abiding citizen. As an old man, who is supposed to be a wise man, too, I have to make preparations for my next trip to America. I will get as dry as an Egyptian mummy. I shall be able to stand not only the dryness of your deserts but also the dryness of Manhattan Island. To begin with, I fill my glass with pure "dry" liquid, giving you a good example, but assuring you at the same time that I do not intend to denounce you at home for your obvious liking of our light and wholesome Austrian wines.

I raise my glass with its lawful contents and invite you to join me in three cheers to the only remedies to this shattered world: Oblivion and Collaboration!

Editor's Note—Professor Lorenz' address appears exactly as he read it, the editor feeling that the address would be of greater interest if his prerogatives were waived.

OBITUARY

ALEXANDER RIGHTER CRAIG

Dr. Alexander Righter Craig, secretary of the American Medical Association since 1911, died suddenly on September 2, 1922, while on his vacation.

Dr. Craig was born in Columbia, Pennsylvania, July 31, 1868, the son of Dr. Alexander Craig. He received his academic degree from Franklin and Marshall College, Pennsylvania, in 1890, and his M. D. from the University of Pennsylvania in 1893. Returning to his home town, the doctor practiced there from 1895 to 1906, when he moved to Philadelphia, where he continued practice until 1911.

Dr. Craig served Pennsylvania continuously in the House of Delegates from 1903 to 1910, and was a member and chairman of many important committees; he was chairman, at three different sessions, of the Committee on Amendments to the constitution and by-laws and chairman of the Committee on Reports of Officers in 1909.

At the Los Angeles session, Dr. Craig was elected secretary of the American Medical Association, a position which he admirably filled until his untimely death. It is said that Dr. Craig looked upon his chosen work in the organized profession in the nature of a calling and his energy and ability in the many phases of association work are well known. Active in religious and social work, Dr. Craig's religion was carried into his life work, which accounts for the fact that "he was universally loved, a man with never a harsh word, calm, self-effacing, reticent, and withal a marvel of efficiency in his chosen work."

JOHN J. EKLUND

Dr. John J. Eklund of Duluth, Minnesota, was shot and instantly killed in his office the morning of August 19, 1922. His insane assailant immediately suicided. This tragic result of allowing anyone to carry concealed weapons has robbed our profession of one of its foremost members.

Dr. Eklund was Swedish born, coming to America with his parents when about five years old and residing with them at Taylor's Falls, Wisconsin. Later they lived at Cambridge, Minnesota, where he attended the elementary schools. He was one of the early students at Gustavus Adolphus College, and one of its best known graduates. He always referred to its early moral and intellectual atmosphere with the greatest appreciation. His collegiate training and associations greatly assisted him later in becoming an unusual influence for good among his Swedish-American countrymen; it was the foundation for his wise political and social counsel.

He graduated in medicine in 1885 from the old Minnesota College Hospital, an institution that became one of the earliest affiliations of the medical department of the University of Minnesota. He settled at once in Duluth. November 7, 1888, he married Miss Nannie Asp, of St. Peter. They had one son, William. Mrs. Eklund died in 1905.

Few men ever coped more seriously with an ever increas-

ing practice that yielded him heavy responsibilities and little leisure. His charitable trend and never failing sympathy soon brought him a following among all classes, and in later years a very large surgical clientele.

It has fallen to the lot of few physicians to receive the degree of public confidence accorded Dr. Eklund. This, combined with unusual political sagacity and business judgment, gave him a very high position in the councils of his chosen party (Republican), and a directorate in several banks and business enterprises. Thus he became a physician who reflected the very highest credit upon his profession. Of foreign birth, he himself attained and assisted thousands of others of our great Scandinavian population, to reach the highest type of citizenship, the truest and finest Americanism.

For himself he asked little political preferment. Some years ago he accepted the office of coroner of St. Louis County, hardly a lucrative position, and during the war he was chairman of the Fourth District Exemption Board.

At his death he was chief of staff of St. Luke's Hospital, showing in this position great surgical capacity. He was president of the Duluth National Bank, and a director in the Northern National Bank, an illustration of his keen business enterprise. He was also a member of many civic and social clubs, reflecting his broader general interests. He had received many honors at the hands of his professional brethren; for example, the presidency of the St. Louis County Medical Society. He was also a Fellow of the American College of Surgeons.

Of his immediate family he leaves to mourn him besides his son and associate, Dr. William J. Eklund, a brother, N. C. Eklund, residing in Montana; two sisters, Mrs. J. D. Olson, of Minneapolis, and Mrs. Mary Engdahl, of Ortonville, Minnesota; also a niece, Miss Nathalie Asp, who resided with him for some years.

DR. JOHN EMMETT RHEIM

Dr. John Emmett Rheim, for the past seven years practicing physician at Mora, Minnesota, died suddenly Sunday morning, July 30, at Mille Lacs Lake, where he and his wife with several other families were camping.

Dr. Rheim had been ill for some time but following a successful operation in a Minneapolis hospital was reported as recovering rapidly. His sudden death at the cottage where he and Mrs. Rheim had gone for an outing was a distinct shock to every one who knew him.

John Emmett Rheim was born at Missoula, Montana, January 1, 1885. He graduated from the Butte, Montana, high school in 1906 and then took up the study of medicine at the Northwestern University Medical School in Chicago, from which he obtained his degree in 1910 and began practice at Knife River and Duluth, Minnesota. In 1913 Dr. Rheim moved to Grasston. It was here that he met Miss Stella Peterson, who became Mrs. Rheim, January 2, 1915. In October of that year Dr. Rheim moved to Mora and established his home and practice there.

Dr. Rheim was held in the highest esteem in Kanabec county, where he served as county coroner and health officer for the village of Mora. He also served two terms as mayor of Mora. His outstanding characteristics were honor, integrity and fairness. His reputation as a physician was an enviable one and he leaves many friends in all walks of life to mourn his untimely death.

DR. H. N. McDONALD

Dr. H. N. McDonald, who had been a practicing physician in Minneapolis for the past thirty-three years, died at his home, 901 Fourth Street Southeast, Saturday, July 22.

Dr. McDonald was born fifty-nine years ago in Glengarry, Ontario, and graduated from McGill University in 1889, coming to Minneapolis to start his practice the same year. He married Miss Christine McLeod of Minneapolis in 1894.

He was prominent in club organizations as well as in a professional way, being a member of Cataract lodge, Masonic order, a Scottish rite member and also a member of Zurah temple. He belonged to the Minneapolis Athletic Club and was a charter member of the St. Anthony Falls club.

Dr. McDonald is survived by his wife and two daughters, Mrs. Hart Anderson and Miss Isabel McDonald, a sister and a brother, Dr. D. M. McDonald of the Minnesota State Sanitary Board, St. Paul.

A man of steadfast character and likable personality, Dr. McDonald has left an influence among medical men and other associates which will not be forgotten.

DR. J. P. CALDWELL

Dr. J. P. Caldwell, a practicing physician of St. Paul, Farmington, Lakeville and Princeton, Minnesota, died September 7 at his home, 1446 West Minnehaha avenue, St. Paul, at the age of 74 years.

Dr. Caldwell was born at Manchester, Illinois, January 28, 1848, and came to Lakeville 40 years ago. He had been a resident of St. Paul for the past 25 years but discontinued active practice 20 years ago.

Dr. Caldwell served with the 113th Illinois Volunteers in the Civil War and was active in the G. A. R. He took an active part in the campaign for William R. Merriam for governor and for a time was secretary to Senator Moses E. Clapp at Washington.

Dr. Caldwell is survived by his widow, four sons, three of whom are practicing physicians in St. Paul, and a daughter.

DR. FREDERICK A. KNIGHTS

Dr. Frederick A. Knights of Pequot, for eleven years a practicing physician of Minneapolis, died at St. Joseph's hospital, Brainerd, Minnesota, following an illness of several months.

Dr. Knights was born in Illinois, August 23, 1861. He was graduated from the Northwestern University Medical School in Chicago in 1890. Following his practice in Minneapolis he moved to Pequot on account of ill health and had been in business in the latter town for the past nine years.

REPORTS AND ANNOUNCEMENTS OF SOCIETIES

MINNESOTA STATE MEDICAL MEETING

The annual meeting of the Minnesota State Medical Association is scheduled for Thursday, Friday and Saturday, October 12, 13, and 14, 1922, at the University of Minnesota in Minneapolis. The Council will meet at 10 a. m., October 12, and the House of Delegates at 2 p. m., October 12, at Millard Hall. Registration headquarters will also be at Millard Hall.

The Ladies' Auxiliary of the Hennepin County Medical Society will supervise information booths at the Curtis Hotel, Radisson Hotel, and Millard Hall. Information will be obtainable at the rooms of the Hennepin County Medical Society in the Donaldson Building, Minneapolis, at any time during the convention.

There will be telephone accommodations furnished in all University buildings and long distance calls will be put through the University of Minnesota central by way of the Physicians' Exchange booth only. This booth will be next the registration booth in Millard Hall.

The scientific meetings will occupy Friday and Saturday, October 13 and 14. The medical section will hold its meeting in the Engineering building and the surgical section in the Anatomy building. The joint meeting Friday afternoon will be held in the Engineering building. There will be a short joint session at 2 o'clock Saturday afternoon also.

Clinics for visiting doctors will be held all day Thursday in the various hospitals in Minneapolis. Information regarding these clinics can be obtained Wednesday evening after 6 o'clock and Thursday at the Hennepin County Society headquarters. Dr. A. T. Mann has general supervision of the clinics.

Visiting doctors and ladies may procure cards for the various golf courses in the Twin Cities by applying at the registration desk. Dr. H. N. Newhart, 910 Donaldson Bldg., chairman of the entertainment committee, has charge of golf arrangements.

Physicians and their ladies are invited to the annual banquet which will be held at the Curtis Hotel at 7 o'clock Friday evening. Some lay speaker of note will address the members following a banquet and special entertainment, to be provided. Dr. G. Elmer Strout is chairman of the banquet committee. Visiting ladies are invited to meet at 11 o'clock on Thursday at the Curtis Hotel, where transportation will be furnished for the luncheon to be given by the Ladies' Auxiliary of the Hennepin County Medical Society at the Minneapolis Automobile Club house.

Exhibits will consist of the following:

1. Commercial exhibits in the corridors of Millard Hall and the Institute of Anatomy. Dr. S. R. Maxeiner has charge of these exhibits.

2. Scientific exhibits consisting of *x*-ray demonstrations, pathological material, etc. Physicians throughout the state are urged to send in material for this exhibit and should communicate with Dr. K. Ikeda, Minneapolis General Hospital, chairman of this committee. Where a roentgen opinion is desired, the committee in charge will take particular pains to obtain it from visiting specialists for the benefit of inquiring participants. Each film must be labeled showing name of exhibitor, diagnosis and, where desirable, a brief history. Films should be sent directly to the *x*-ray committee, care of Dr. E. T. Bell, Department of Pathology, University of Minnesota, Minneapolis.

3. Demonstrations by the departments of Pathology, Bacteriology, Pharmacology, Physiology and Experimental Surgery.

Following appears a list of local committees:

Committee on Arrangements—Dr. E. L. Gardner Chairman; Dr. Horace Newhart, Dr. J. C. Litzenberg, Dr. W. R. King, Dr. A. T. Mann, Dr. Nimrod Johnson, Dr. P. W. Giessler, Dr. A. E. Smith, Dr. A. F. Schmitt.

Committee on Exhibits—Dr. S. R. Maxeiner, Chairman; Dr. J. B. Carey, Dr. S. M. White.

Scientific—Dr. E. T. Bell, Dr. J. S. McCartney, Dr. W. A. O'Brien, Dr. C. M. Jackson.

X-Ray—Dr. K. Ikeda, Chairman; Dr. R. W. Morse, Dr. F. H. K. Schaaf, Dr. A. W. Desjardins, Dr. T. R. Martin.

Commercial—Dr. S. R. Maxeiner, Chairman; Dr. F. J. Souba, Dr. H. M. Lee.

Committee on Banquet and Entertainments—Dr. G. E. Strout, Chairman; Dr. O. S. Wyatt, Dr. C. E. Willcutt, Dr. F. J. Souba, Dr. Ivar Sivertsen, Dr. T. H. Sweetser, Dr. L. M. Lajoie, Dr. E. R. Hare, Dr. E. D. Anderson.

Committee on Hotel Accommodations—Dr. G. E. Benson, Dr. G. E. Thomas.

Committee on Publicity—Dr. A. E. Smith, Chairman; Dr. W. A. Jones, Dr. C. B. Drake.

Important! The National Dairy Show is to meet in Minneapolis, October 7 to 14 inclusive. Visiting physicians should therefore make their hotel reservations as soon as possible either directly or by communicating with Dr. E. L. Gardner, 730 LaSalle Bldg., or Dr. S. G. Reynolds, 816 LaSalle Bldg., Minneapolis.

The following papers will be read:

Medical Section

The Training of the Laboratory Technician—Dr. Walter E. King, St. Paul.

Bilateral Induced Pneumothorax—Dr. Everett K. Geer, St. Paul.

The Relation of the General Hospital to the Tuberculosis Sanatorium—Dr. A. T. Laird, Nopeming.

Non-Specific Irritation: A Precipitating Cause of the Anaphylactic Diseases of Infancy and Childhood—Dr. W. Ray Shannon, St. Paul.

The Present Status of Medical Opinion Concerning the Nature, Diagnosis and Prognosis of Encephalitis Epidemica—Dr. Charles R. Ball, St. Paul.

Chronic Intestinal Indigestion in Infancy and Early Childhood—Dr. Rood Taylor, Minneapolis.

Treatment of Duodenal Ulcer—Dr. Hugh S. Willson, Minneapolis.

The Value of Routine Coagulation and Bleeding Time in New Born Infants—Dr. Margaret Warwick, St. Paul.

Diagnosis of Uterine Malignancy—Dr. O. C. Melson, Rochester.

Status Thymico-Lymphaticus in Infancy—Dr. Carl O. Kohlbry, Duluth.

The "Local" Wassermann Reaction: A New Diagnostic Aid in Primary Syphilis—Dr. H. Rypins and Dr. D. Stern, Minneapolis.

Importance of a Longer Period of Rest in Bed with Medical Supervision, in order to Prevent Heart Lesions Following the Infectious Diseases—Dr. Walter R. Ramsey, St. Paul.

Milk Transmission of Pollen Hay Fever—Dr. Edgar T. Hermann, St. Paul.

Diseases Associated with Pernicious Anemia—Dr. H. Z. Giffin and Dr. J. P. Bowler, Rochester.

Standardization of Laboratories and Technicians—Dr. Kano Ikeda, Minneapolis.

The Value and Importance of Blood Chemistry in Clinical Medicine—Dr. Moses Barron, Minneapolis.

Handling of Heart Diseases in Children—Dr. Max Seham, Minneapolis.

Some Unusual Postoperative Pulmonary Complications—Dr. Norman M. Keith, Rochester.

The Clinical Diagnosis of Gastric and Duodenal Ulcer—Dr. O. J. Hagen, Moorhead.

The Psychopathic Hospital—Dr. Arthur S. Hamilton, Minneapolis.

Significant Changes in Heart Outline Following Rational Treatment—Dr. Charles L. Greene, St. Paul.

Myxedema—Dr. H. S. Plummer, Rochester.

Life Insurance Medicine—Dr. H. W. Cook, Minneapolis.

Strophanthus: Kombe Laboratory and Clinical Considerations—Dr. R. A. Morris, St. Paul.

Observations and Experiences on Six Hundred Duodenal Drainages—Dr. C. P. Robbins, Winona.

Tuberculous Peritonitis—Dr. A. C. Baker, Fergus Falls.

SURGICAL SECTION

Diaphragmatic Hernia—Dr. A. T. Mann, Minneapolis.

Pancreatic Cysts—Dr. H. A. Bouman, Minneapolis.

Subject to be announced—Dr. W. A. Sistrunk, Rochester.

Dysmenorrhea—Dr. J. S. Rothrock, St. Paul.

Injuries to the Lower Birth Canal—Dr. J. R. Manley, Duluth.

A Review of One Hundred Fifty-three Cases of Bladder Stone Removed by Lithotrity—Dr. J. S. Crenshaw, Rochester.

Diagnosis and Treatment of Ureteral Stone—Dr. G. J. Thomas, Minneapolis.

Surgery of Acute Gallbladder Conditions—Dr. E. S. Judd, Rochester.

Motion Pictures and Animated Drawings Illustrating the Application of Local Anesthesia—Dr. R. E. Farr, Minneapolis.

Preoperative Preparation of Patients with Obstructive Jaundice—Dr. Waltman Walters, Rochester.

Traumatic Rupture of the Spleen: Report of Seven Cases—Dr. E. C. Robitshek, Minneapolis.

Diverticulitis of the Colon—Dr. J. T. Rogers, St. Paul.

Essentials in the Treatment of Peritonitis—Dr. Donald Bacon, St. Paul.

The Causes, Repair and Management of Postoperative Abdominal Hernia—Dr. A. E. Benjamin, Minneapolis.

Cerebral Pneumography as an Aid in the Early Diagnosis of Hydrocephalus—Dr. O. S. Wyatt, Minneapolis.

Heliotherapy in Infectious Diseases of the Bones and Joints—Dr. Emil Geist, Minneapolis.

Surgical Treatment of Infantile Paralysis—Dr. M. S. Henderson, Rochester.

Pseudo-neuritis or Irritable Conditions Following Injury—Dr. A. E. Wilcox, Minneapolis.

Congenital Pyloric Stenosis—Dr. A. C. Strachauer, Minneapolis.

The Use of Nerve Block Anesthesia in General Surgery—Dr. W. R. Meeker, Rochester.

A Study of the Tonsil Question with a Preliminary Report of *X*-Ray and Radium Therapy in the Treatment of Pathologic Tonsils—Dr. Laura Lane, Minneapolis.

Some Important Features in the Diagnosis and Operative Treatment of the Sinuses—Dr. H. A. Beaudoux, Minneapolis.

MISSISSIPPI VALLEY MEDICAL ASSOCIATION

OFFICERS

President—Charles E. Barnett, M. D., Ft. Wayne, Ind.

First Vice President—William Engelbach, M. D., St. Louis, Mo.

Second Vice President—John DeJ. Pemberton, M. D., Rochester, Minn.

Secretary—Henry Enos Tuley, M. D., Louisville, Ky.

Treasurer—S. C. Stanton, M. D., Chicago, Ill.

Chm. Com. Arrangements—Robert D. Mussey, M. D., Rochester, Minn.

The annual meeting of the Mississippi Valley Medical Association, whose membership includes physicians throughout the United States and Canada, will be held at Rochester, Minnesota, October 10, 11, and 12, 1922.

This meeting is scheduled for the three days immediately preceding the Minnesota State Medical Association meeting, thus affording the unusual opportunity for members of the profession to attend both meetings. A Genito-Urinary Symposium will be opened by Dr. Frank Kidd of London, England, and promises to be of unusual interest.

Headquarters will be at the Kahler Hotel, Rochester, and reservations should be made early to Dr. P. P. Vinson, Chairman of the Hotel Committee, Rochester, Minnesota.

Following is the preliminary program:

President's Address—Kidney Metabolism—Chas. E. Barnett, Fort Wayne, Ind.

Oration in Medicine—Stewart R. Roberts, Atlanta, Ga.

Oration in Surgery—William C. Quinby, Boston, Mass.

George V. I. Brown, Milwaukee, Wis.—Report of the Result of Continuous Experience in the Surgical Operative Treatment of Cleft Palate.

B. C. Corbus, Chicago, Illinois—The Treatment of Tumors of the Bladder by Thermo-Electric Coagulation.

Leo M. Crafts, Minneapolis, Minn.—Epidemic Encephalitis—Its Widely Variant Syndromes.

C. W. Dowden, Louisville, Ky.—A Report on the Animo-Acid Content of Human Blood.

Joseph Rilus Eastman, Indianapolis, Ind.—Safety in Drainage of Intra-Abdominal Abscesses.

Charles P. Emerson, Indianapolis, Ind.—The Vascular Element in Cardiovascular Renal Disease.

W. D. Haines, Cincinnati, Ohio—The Surgical Management of Goiterous Patients.

Preston M. Hickey, Ann Arbor, Mich.—The Consideration of Some of the Infections of the Sacroiliac Joint as an Explanation of Lower Back Pains.

W. Stuart Leech, Roseau, Minn.—The Pineal Gland and the Condition of the Ego During Sleep.

Angus McLean, Detroit, Mich.—Thromboses—Etiology and History—Percentage of Cases Following Operation, the Relation of the Thrombi to Emboli—Subsequent Effects of Emboli, Lantern Demonstrations.

Frank P. Norbury, Jacksonville, Ill.—The Economics and Mental Hygiene of Neurosyphilis.

F. M. Pottenger, Monrovia, Calif.—The Nature and Cause of Visceral Pain: Illustrated by Pain Arising in the Lung and Pleura.

J. S. Pritchard, Battle Creek, Mich.—The Value of Rest in Cases of Pulmonary Abscess and Empyema.

Willard C. Stoner, Cleveland, Ohio—Modern Diagnosis of Disease versus Modern Treatment.

J. L. Tierney, St. Louis, Mo.—Diagnostic Signs of Endocrine Disease.

Willis Walley, Jackson, Miss.—The Importance of Clinical Diagnosis in Surgery of Stomach, Gallbladder and Appendix.

Frank T. F. Stephenson, Detroit, Mich.—Observation on Use of a Reptilian Tubercle Bacillus in Tuberculosis.

Symposium on Genito-Urinary Diseases.

DODGE COUNTY MEDICAL SOCIETY

The Dodge County Medical Society held its eighteenth annual meeting at the picnic grounds north of Dodge Center, Friday, September 1. With the exception of one, all members of the society were present, who with their families made an attendance of forty.

Officers re-elected for the ensuing year are: Dr. E. E. Harrison, West Concord, president; Dr. W. E. Belt, Dodge Center, vice president; Dr. C. E. Bigelow, Dodge Center, secretary-treasurer.

The society passed a resolution condemning legislation hostile to the present standards of medical practice in Minnesota and a committee was appointed to obtain information upon the subject.

SOUTHWESTERN MINNESOTA MEDICAL SOCIETY

The Southwestern Minnesota Medical Society will hold its semi-annual meeting at Windom, October 26. Election of officers and a report by the committee on "Public Policy and Legislation" with a program of papers will comprise the meeting. A banquet has been planned to be served at 6 o'clock. The society sends a cordial invitation to all visitors who would like to attend.

RAMSEY COUNTY MEDICAL SOCIETY

The Ramsey County Medical Society held its first fall meeting September 25th. Papers were read by Dr. J. T. Christison and Dr. T. L. Birnberg.

The Ramsey County Medical Society will hold its third annual "Clinic Week," January 9, 10, 11, 12 inclusive, 1923.

TRI-STATE DISTRICT MEDICAL ASSOCIATION

Comprising Entire States of Iowa, Illinois and Wisconsin and Districts of Surrounding States

The annual assembly of the Tri-State District Medical Association is to be held in Peoria, Illinois, October 30, 31, November 1 and 2. The entire time of the assembly will be taken up with scientific addresses, essays and diagnostic clinics. Minnesota physicials are most cordially invited to attend and hotel reservations should be made early by communicating with Dr. Wm. B. Peck, managing director, Freeport, Illinois.

Following is a partial list of eminent men of the profession who will take part in the program:

Dr. Alfred W. Adson, Mayo Clinic, Rochester, Minnesota.

Dr. William Seaman Bainbridge, New York, N. Y.

Dr. Frank Billings, Prof. of Medicine, Rush Medical College, School of Medicine, Chicago, Illinois.

Dr. Ernest S. Bishop, Clinical Prof. of Medicine, New York Polyclinic Medical School, New York, N. Y.

Dr. Francis G. Blake, Prof. of Medicine, Head of Department of Medicine, Yale University, School of Medicine, New Haven, Conn.

Dr. Walter W. Chipman, Prof. of Obstetrics and Gynecology, University of McGill, Faculty of Medicine, Montreal, Canada.

Dr. John G. Clark, Prof. of Gynecology, University of Pennsylvania, School of Medicine, Philadelphia, Pa.

Dr. Lewis A. Conner, Prof. of Medicine, Cornell University, School of Medicine, New York, N. Y.

Dr. George W. Crile, Prof. of Surgery, Western Reserve University, School of Medicine, Cleveland, Ohio.

Dr. John B. Deaver, Prof. of Surgery, University of Pennsylvania, School of Medicine, Philadelphia, Pa.

Dr. Charles A. Elsberg, Prof. of Clinical Surgery, University and Bellevue Hospital, Medical College, New York, N. Y.

Dr. John M. T. Finney, Prof. of Clinical Surgery, Johns Hopkins University, Medical Department, Baltimore, Md.

Dr. Andrew Fullerton, Belfast, Ireland.

Dr. John H. Gibbon, Prof. of Surgery and Clinical Surgery, Jefferson Medical College, Philadelphia, Pa.

Dr. William D. Haggard, Prof. of Surgery, Vanderbilt University, School of Medicine, Nashville, Tenn.

Dr. Charles F. Hoover, Prof. of Medicine, Western Reserve University, School of Medicine, Cleveland, Ohio

Dr. August Frederic Jonas, Prof. of Surgery, University of Nebraska, School of Medicine, Omaha, Nebr.

Dr. Allen B. Kanavel, Prof. of Surgery, Northwestern University, School of Medicine, Chicago, Illinois.

Dr. Einar Key, Riddaregatan 1, Stockholm, Sweden.

Dr. Robert W. Lovett, Prof. of Orthopedic Surgery, Harvard University, School of Medicine, Boston, Mass.

Dr. Charles F. Martin, Prof. of Medicine, McGill University, Faculty of Medicine, Montreal, Canada.

Dr. William J. Mayo, Mayo Clinic, Rochester, Minnesota.

Dr. John Lovett Morse, Prof. Emeritus of Pediatrics, Harvard University, School of Medicine, Boston, Mass.

Dr. Joseph A. Pettit, Prof. of Surgery, North Pacific College, Portland, Oregon.

Dr. George M. Piersol, Prof. of Medicine, University of Pennsylvania, School of Medicine, Philadelphia, Pa.

Dr. Alexander Primrose, Dean and Prof. Clinical Surgery, University of Toronto, Faculty of Medicine, Toronto, Canada.

Dr. Emmett Rixford, Prof. of Surgery, Leland Stanford Junior University, School of Medicine, San Francisco, California.

Dr. Greenfield Sluder, Prof. of Laryngology and Rhinology, Washington University, School of Medicine, St. Louis, Mo.

Professor Theodor Tuffier, Paris, France.

Dr. John A. Witherspoon, Prof. of Medicine, Vanderbilt University, Medical Department, Nashville, Tenn.

MISSISSIPPI VALLEY TUBERCULOSIS CONFERENCE

Officers

Robinson Bosworth, M. D., St. Paul—President.

P. G. Peterson, M. D., Columbus, Ohio—Vice President.

H. E. Deerholt, M. D., Milwaukee—Secretary-Treasurer.

The tenth annual meeting of the Mississippi Valley Tuberculosis Conference will take place at Milwaukee, October 9, 10, 11, 1922. In addition to the speakers of the Mississippi Valley States, the following visitors will address the conference:

Dr. Lawrason Brown, President, National Tuberculosis Association, New York City.

Dr. David A. Stewart, Ninette Sanatorium, Manitoba. Canada.

John A. Kingsbury, Milbank Memorial Fund, New York City.

Dr. H. A. Pattison, Supervisor of Medical Service, National Tuberculosis Association, New York City.

Dr. C. D. Parfitt, Superintendent and Medical Director, Calydon Sanatorium, Gravenhurst, Ontario, Canada.

Dr. A. M. Forster, Physician in Chief, Cragmor Sanatorium, Colorado Springs, Colorado.

Dr. David R. Lyman, Superintendent, Gaylord Farm Sanatorium, Wallingford, Connecticut.

Owen R. Lovejoy, General Secretary, National Child Labor Committee, New York City.

Philip P. Jacobs, Publicity Director, and

Dr. Linsley Williams, Managing Director, National Tuberculosis Association, New York City.

Dr. M. P. Ravenel, former President, National Tuberculosis Association.

WESTERN SURGICAL ASSOCIATION

The next meeting of the Western Surgical Association will be held in Minneapolis, December 8 and 9, 1922. Headquarters for the meeting will be located at the Radisson Hotel.

OF GENERAL INTEREST

Dr. A. D. Corniea of the Earl Clinic, St. Paul, has moved to Centerville, Iowa.

Dr. G. L. Baker of Austin has recently moved his practice to Rib Lake, Wisconsin.

Dr. G. Van Beck of Hastings has located in Mazeppa, where he will practice medicine.

Dr. and Mrs. C. A. Undine of Minneapolis are receiving congratulations on the birth of a son.

Dr. A. E. Williams, formerly of Backus, Minnesota, is now located at Fall Creek, Wisconsin.

Dr. and Mrs. J. E. Crewe of Rochester have returned from a camping trip north of Brainerd.

Dr. James F. Lynn of Waseca is running for the office of congressman from his district this fall.

Dr. G. Schmidt and family of Lake City have returned from a trip of several weeks through the east.

Dr. F. W. Whitmore and Dr. W. R. Shannon are now occupying Suite 323 in the Lowry building, St. Paul.

Dr. Frank H. Gunn, formerly of Baudette, has opened his office at Fortieth street and Central avenue, Minneapolis.

Dr. Paul F. Brown of Minneapolis has been appointed Chief Surgeon in the U. S. Veterans' Hospital, No. 76, at Chicago.

Dr. William Gamble of Minneapolis has moved to Albert Lea where he will establish his practice of medicine and surgery.

Dr. E. C. McGehee of the Rood Hospital staff, Hibbing, has left for Greasy Creek, Ky., where he will take up his practice.

Dr. and Mrs. E. Bratrud of Warren recently returned from a two weeks' outing at Detroit. The trip was made by motor.

Dr. G. L. Merkert of Minneapolis is now located in his new office at 1527 East Lake street, which was recently remodelled.

Dr. Thomas Myers of St. Paul is in the East taking postgraduate work in pediatrics at Chicago, New York and Baltimore.

Dr. A. B. Moore of Rochester attended the Roentgen Ray Society convention which was held in Los Angeles, September 12 to 16.

Dr. Verne C. Hunt of the Mayo Clinic, Rochester, has returned from a three weeks' trip to Duluth, Buffalo and the New England states.

Dr. C. O. Estrem and family of Fergus Falls have returned from a three weeks' trip through the southern and northern parts of Minnesota.

Dr. G. E. McCann of Nevis, Minnesota, has located his practice at Kensington and will work in conjunction with Dr. F. W. Powers at Barrett.

Dr. and Mrs. H. E. Douglas and daughter, Agnes, of Blackduck, have returned from a motor trip through southern Minnesota and Iowa.

Dr. A. S. Jackson, formerly a fellow in surgery in the Mayo Foundation, announces his association with the Jackson Clinic, Madison, Wisconsin.

Dr. J. R. Sturre of Watkins has purchased the lot next to the Watkins State Bank for the purpose of erecting a combined hospital and office building.

Dr. E. C. McBeath has announced the opening of an office at 663-664 Hamm Bldg., St. Paul. Dr. McBeath specializes in the diseases of children.

Dr. and Mrs. O. J. Baldwin, who have made their home at Chisholm for the past two years, have left for Rockford, Illinois, where Dr. Baldwin will practice.

Dr. E. M. Johnstone announces the opening of offices for the practice of medicine and surgery in Pasadena, California, Dowarth building, suite 207-208.

Dr. William H. Rumpf of Faribault, who with his son, Ernest, of Minneapolis, recently spent a few weeks at Bemidji, has returned to his practice at Faribault.

Dr. G. H. Jackson of Rochester has gone to Billings, Mont., where an epidemic of infantile paralysis is raging, to aid in suppressing the disease in that community.

Dr. J. S. McCartney, Assistant Professor of Pathology at the University of Minnesota, formerly a fellow in the Mayo Foundation, visited the Mayo Clinic, September 5.

Dr. F. A. Wenger, formerly City and County physician, St. Paul, has become associated with Dr. Adolph H. Ahrens at 920 Rice street, where he will maintain a private practice.

Dr. Gilmer, who has been a fellow in pathology in the Mayo Foundation since January 1, has left for a year's internship in St. Vincent's Charity Hospital, Cleveland, Ohio.

The Ramsey County Medical Society has endorsed the placing of the American Medical Association automobile emblem on their automobiles by those members who desire to do so.

Dr. Harry Bartron and family of Watertown, S. D., were guests of Dr. Bartron's mother at Lake City recently en route to Boston, Mass. The entire trip is being made by automobile.

Dr. H. B. Ward, formerly Dean of the College of Medicine at the University of Nebraska, now Professor of Ecology at the University of Illinois, recently visited the Mayo Clinic.

Dr. H. T. McGuigan of Red Wing was a speaker on the program of the meeting of the Red Wing Kiwanis Club last month. His address was concerned with his recent tour of Europe.

Dr. B. F. McGrath, Dean of the Medical School and Professor of Bacteriology and Pathology at Marquette University, Milwaukee, formerly of the Mayo Clinic, recently visited the Clinic.

Dr. C. W. Wells of the Rockefeller Foundation, visited the Mayo Clinic August 9.

Dr. H. A. DesBrisay left the Mayo Clinic August 14 on a year's leave of absence.

Dr. C. R. Sanborn, who has been a practicing physician in Bemidji, has sold his practice to Dr. B. J. Martin. Dr. Sanborn is planning to take up postgraduate work before seeking a new location.

Dr. John T. Bowers, who for several years has been associated with his brother, Dr. Harry E. Bowers, in his practice at Lake City, has opened his office in River Falls, Wisconsin, for private practice.

Dr. and Mrs. Horace Newhart, Minneapolis, have returned home from a short trip to California. In San Francisco they were with Mrs. Newhart's sister, Mrs. Charles T. Perry of New York.

Dr. R. G. Andres has moved to St. Paul, where he has opened a temporary office at 936 Lowry Bldg. for the practice of general surgery. Dr. Andres has spent several years at the Mayo Clinic in Rochester.

Dr. and Mrs. R. Turnbull of Fosston have returned from a trip to Winnipeg. Dr. Turnbull recently injured two fingers of his right hand thus making it impossible for him to carry on his surgical work for a time.

Dr. Stella L. Wilkinson, who has returned from a year's study at the postgraduate school of medicine of the University of Pennsylvania, has announced the opening of her office at 224 New Jersey Bldg., Duluth.

Dr. George Schlesselman, for several years a practitioner at Taylor, Wisconsin, has taken up his practice at Good Thunder, Minn. Dr. and Mrs. Schlesselman were recently the guests of Dr. J. T. Schlesselman and family at Mankato.

Dr. Sara A. Nimocks who has been with the State Teachers' College at Winona, Minnesota, for several years, is among the new members of the faculty of the Northern Normal and Industrial School at Aberdeen, S. D., this year.

Dr. Schultz, who has been a student in pathology in the Mayo Foundation since April 1, has gone to San Francisco, where he will resume his duties as associate professor of Bacteriology and Experimental Pathology, at Stanford University.

Dr. Thayer C. Davis, formerly of Glenwood, has moved to Wadena, where he will practice in partnership with his brother, Dr. Thomas L. Davis, under the firm name of Davis & Davis, physicians and surgeons. The brothers are sons of Dr. A. M. Davis.

Dr. Bozer, who has completed a fellowship in the Mayo Foundation, has gone to Logansport, Indiana, where he will visit at his home before he enters the Butsch Clinic in Buffalo. Dr. Bozer will have charge of the Nose and Throat Section at the Butsch Clinic.

Announcement has been received of the marriage of Miss Eva Enke of Rochester and Dr. Edward T. Butler, formerly of the Mayo Clinic, at Buffalo, N. Y., August 21. Dr. and Mrs. Butler will make their home at 438 Delaware Ave., Buffalo. Dr. Butler is associated with the Buffalo Clinic.

Dr. and Mrs. E. R. Dezell, Minneapolis, have returned from a three months' trip to the Pacific coast. They went by way of the Canadian Rocky Mountains and north as far as Alaska, thence to southern California by boat. In La Crosse, Wash., Dr. and Mrs. Dezell were the guests of Dr. Dezell's mother.

The marriage of Miss Edith C. Smith and Dr. Frank E. Ellison of Monticello was solemnized Friday evening, September 1, at the home of the bride's parents in Monticello. Dr. and Mrs. Ellison have returned from a two weeks' motor trip through the northern part of the state and are now at home in Monticello.

Dr. William H. Rumpf, Jr., of Ann Arbor, Mich., son of Dr. William Rumpf of Faribault, and Miss Dorothy Rosholt of Minneapolis, were married Wednesday, September 6, at Minneapolis. Dr. Rumpf is on the staff of Dr.

Reuben Peterson in the department of gynecology and obstetrics of the University of Michigan.

The marriage of Dr. J. R. McNutt of Two Harbors and Miss Elsie Gerlach of Barnum, Minn., was solemnized at the Spaulding Hotel, Duluth, Wednesday evening, August 30. Following an automobile trip through the Northwest, Dr. and Mrs. McNutt will be at home in Two Harbors, where Dr. McNutt is a member of the local hospital staff.

Dr. C. P. Robbins, of Winona, has returned from St. Louis, Mo., where he recently completed some special medical work at the University of Missouri. Previous to his work in St. Louis, Dr. Robbins took up a course in the study of blood chemistry and metabolism at the Presbyterian hospital with Professor Weaver of the University of Illinois.

The opening of the Grygla hospital which has been closed for some time, took place October 1 upon the completion of extensive repair and improvement work. Dr. C. M. Adkins of Thief River Falls, who for a number of years conducted the hospital at Grygla, will return to the village for the purpose of becoming medical director of the institution.

Mrs. Charles E. Proshek, wife of Dr. Proshek of Jordan, arrived in August in New York from Europe. Mrs. Proshek was met by Dr. Proshek in New York and both came west to New Prague, where they were the guests for a time of Dr. Proshek's parents. They are now at home in Jordan, where Dr. Proshek is connected in his practice with Mudbaden Sanatorium.

A quiet wedding of August was that of Dr. M. C. Bergheim of Hawley, Minnesota, and Miss Mildred M. Engquist of Minneapolis, who were married at St. Anthony Park, August 13. Mrs. Bergheim is a graduate of the University of Minnesota, where she received both her Bachelor of Arts and Master of Arts degrees. She was also elected a member of the Phi Beta Kappa honorary scholarship fraternity.

Dr. Kretschmar, a physician of Munich, Germany, will be associated with the St. John's hospital clinic at Red Wing beginning November 1. Dr. Kretschmar expects to be connected with the clinic for about a year.

Dr. Reuben A. Johnson, who has been associated with Dr. G. D. Head, Minneapolis, will leave this month for a year's postgraduate study in internal medicine in Vienna and other European centers.

The resignation of Dr. Aaron F. Schmitt, secretary-general of the Southern Minnesota Medical Association, has been tendered and regretfully accepted by the Executive Committee of that association. Taking over the executive work at a time when the organization was a loosely joined association of southern Minnesota societies, Dr. Schmitt, through his genius in arranging programs and supervising the multitudinous details always involved in association work and his untiring and self-sacrificing industry in connection with the affairs of the association, has built up this medical organization until it has become one of the foremost and most important of the mid-west associations. Some of the programs arranged for the association were most elaborate and included the names of celebrities from all parts of the country, which served to greatly stimulate local medical thought and interest.

NEW AND NON-OFFICIAL REMEDIES

In addition to the articles enumerated in the September issue, the following articles were accepted during July by the Council on Pharmacy and Chemistry for inclusion in New and Non-Official Remedies:

INTRA PRODUCTS CO.:
Ven Calcium Cacodylate Ampules-Ipco.

WINTHROP CHEMICAL CO.:
Theocin.

During August the following articles have been accepted by the Council on Pharmacy and Chemistry for inclusion in New and Non-official Remedies:

G. W. CARNRICK CO.:
Corpus Luteum-G. W. C. Co.

GRADWOHL LABORATORIES:
Sterile solution of Mercury Oxycyanide-Gradwohl.

LEDERLE ANTITOXIN LABORATORIES:
Pollen Antigens-Lederle.
Solution Epinephrine-Lederle.

NEW YORK INTRAVENOUS LABORATORY:
Loeser's Intravenous Solution of Mercury.
Oxycyanide.

PARKE, DAVIS AND CO.:
Antipneumococcic Serum (Polyvalent).

WINTHROP CHEMICAL CO.:
Luminal Sodium Tablets, 1½ grains.

Sterile Solution of Mercury Oxycyanide.—Each ampule contains 5 c.c. of solution, representing 0.008 gm. (⅛ grain) of mercuric oxycyanide-N.N.R. For a discussion of the actions, uses and dosage of mercuric oxycyanide, see New and Non-official Remedies, 1922, p. 192. Gradwohl Laboratories, St. Louis.

Loeser's Intravenous Solution of Mercury Oxycyanide 0.012 Gm.—Each ampule contains 5 c.c. of solution, representing 0.012 gm. (3-16 grain) of mercuric oxycyanide-N.N.R. For a discussion of the actions, uses and dosage of mercuric oxycyanide, see New and Non-official Remedies, 1922, p. 192. New York Intravenous Laboratory, New York.

Antipneumococcic Serum (Polyvalent)-P. D. and Co.—Antipneumococcus Serum (see New and Non-official Remedies, 1922, p. 287) prepared from the blood of horses immunized with virulent cultures of pneumococci (Type I, II, III and Group IV) and standardized against Type I culture so as to be of the same strength as Type I serum. Marketed in piston syringes containing 50 c.c., with needle and connections. Parke, Davis and Co., Detroit.

Luminal Sodium Tablets 1½ grains.—For a discussion of the actions, uses and dosage of luminal, see New and Non-official Remedies, 1922, p. 61. Winthrop Chemical Co., Inc., New York. (Jour. A.M.A., Aug. 19, 1922, p. 628.)

Pollen Antigens-Lederle.—Liquids obtained by extracting the dried pollen of plants with a liquid consisting of 67 per cent glycerin and 33 per cent saturated solution of sodium chlorid. Pollen antigens-Lederle are marketed in the following forms:

Series A: containing doses 1 to 5 inclusive (2.5, 5, 10, 20 and 25 pollen units, respectively).

Series B: containing doses 6 to 10 inclusive (30, 50, 75, 100 and 150 pollen units, respectively).

Series C: containing doses 11 to 15, inclusive (250, 375, 500, 750 and 1,000 pollen units, respectively).

Complete Series: containing 15 doses.

Diagnostic: containing 1 dose (100 pollen units).

Pollen antigens-Lederle are employed in the diagnosis and treatment of hay fever (pollenosis). (See New and Non-official Remedies, 1922, p. 232.) The following pollen antigens-Lederle have been accepted:

Arizona Ash *(Fraxinus Toumeyi)*.
Arizona Walnut *(Juglans major)*.
Black Walnut *(Juglans nigra)*.
Careless Weed *(Amaranthus palmeri)*.
Cottonwood *(Populus macdougali)*.
June Grass *(Poa pratensis)*.
Ragweed *(Ambrosia elatior)*.
Red Top *(Agrostis palustris)*.
Sage Brush *(Artemisia tridentata)*.
Sheep Sorrel *(Rumex acetosella)*.
Slender Ragweed *(Franseria tenuifolia)*.
Sweet Vernal *(Anthoxanthum odoratum)*.
Timothy Pollen *(Phleum pratense)*.

Lederle Antitoxin Laboratories, New York. (Jour. A. M. A., Aug. 26, 1922, p. 739.)

Theocin.—A brand of theophyllin-U. S. P. prepared synthetically. For a description of theophyllin, see U. S. Pharmacopeia. Winthrop Chemical Company, New York. (Jour. A. M. A., Aug. 26, 1922, p. 739.)

PROPAGANDA FOR REFORM

Eto-So-Erc.—A circular letter, signed T. M. Berry, M. D., New Orleans, recommends the intravenous use of "Eto-So-Erc" ("Creosote" spelled backward) in the treatment of pulmonary tuberculosis, influenza, pneumonia, bronchitis and pulmonary gangrene. Eto-So-Erc is stated to be a "highly purified form of Beechwood Creosote, especially prepared for intravenous administration." It is asserted that "it comes in direct contact and becomes fixed to the pathologic tissue and bacteria." Creosote is credited with being of some value in tuberculous infections when taken orally. It is most probable that any benefits derived from the administration of creosote are due to the local effect on the alimentary canal, on the bronchitis and to the antipyretic action; hence, the benefits would not be obtained from its intravenous injection. The argument is advanced for Eto-So-Erc that, in respiratory infections, tubercle bacilli are destroyed by blood containing small amounts of creosote. This assertion is misleading because the tubercle bacilli in the lungs are embedded in the tissues and, therefore, are inaccessible to the creosote said to be contained in Eto-So-Erc. To give creosote, a readily absorbed drug, intravenously, is irrational and unscientific (Jour. A. M. A., Aug. 5. 1922, p. 492.)

Zinc Stearate Dusting Powders.—Untoward effects from the accidental aspiration of zinc stearate dusting powder by infants are reported. In some cases, bronchopneumonia, of a more or less fulminating type, has ensued. In other infants, an acute toxemia was the most conspicuous symptom. The zinc stearate container, with its large perforations, as now prepared for the nursery, appears to be a distinct menace to the health of infants. (Jour. A. M. A., Aug. 19, 1922, p. 663.)

The "Natural Health School" seems to be the latest creation of Milo Erskine Yergin and his wife. In 1920, Yergin was president of the "Co-Operative Food Company." This concern advertised "Dr. Yergin's Pus and Pain Chart." The chart sold for $10 and was advertised with the claim that it would enable one, "with the simple foods of nature," to control and obliterate completely, in from fifteen minutes to fifteen hours, any kind of pain and all pus conditions. The use of the chart required "Sea Food Baths," "Earth Food Table Salt," "Food Iodine," "Cinnamon Food Oil," "Myrrh Compound." and "Cold Food." All were for sale by the Co-Operative Food Company at prices ranging from 25 cents to $3 a package. The Natural Health School seems to combine a strong mixture of religious fanaticism with the practice of the healing art.

Yergin put forward a "True Musical Therapy" whereby, with the aid of a piano "thoroughly in tune and having high quality strings," it is possible to produce vibration rates corresponding to chemical elements! It is asserted that if the keys corresponding to mercury and chlorine are struck, a sensitive person will respond with a flow of saliva in the month. If the keys are kept sounding for a few moments, a bowel action will be started. The possibilities in treating stomachache, soft corns, psoriasis or smallpox by playing the piano seem unlimited. The preposterous nonsense promulgated by Yergin is, apparently, accepted at its face value by many laymen and not a few so-called "drugless practitioners." The harm that men of this type can do is realized when one reads of persons who are "treating" sufferers from tuberculosis, cancer and equally serious conditions by the fantastic principles laid down by Yergin, and by the nostrums sold by him. (Jour. A. M. A., Aug. 26, 1922, p. 757.)

PROGRESS

Abstracts to be submitted to Section Supervisors.

MEDICINE

SUPERVISORS:
F. J. HIRSCHBOECK,
FIDELITY BLDG., DULUTH
THOMAS A. PEPPARD,
LA SALLE BLDG., MINNEAPOLIS

FURTHER STUDIES OF ROENTGENOGRAPHIC PLEURAL ANNULAR SHADOWS IN PULMONARY TUBERCULOSIS—J. Burns Amberson (Am. Rev. of Tuberculosis, August, 1922).

This author's paper outlining his hypotheses concerning pleural annular shadows was reviewed in these columns in 1921.

It is to be recalled that the localized pneumothorax theory was not accepted and evidence was offered to show that these shadows were produced by the presence of simple chronic or subacute localized pleurisys. Clinically it was shown that the shadows developed and enlarged as accompaniments of active intra-pulmonary disease. The present paper records several additional observations.

The first of these was the finding in one case that the fluid accompanying the peculiar pleural lesion was of the macroscopic character of an ordinary serous effusion. In two cases he observed the development of pleural shadows during the reabsorption of monolateral pleuritic effusions. The author then criticizes the publication of Barlow and Thompson which appears in the American Review of Tuberculosis, 1921, Vol. 5, page 611.

T. A. PEPPARD.

THE "TUBERCULIN" TREATMENT OF BRONCHIAL ASTHMA—W. Strom vanLeeuwen and H. Varecamp Munchener Medizinische Wochenschrift, June 9, 1922). For some time, the authors have considered bronchial asthma and vasomotor rhinitis as disturbances of the nitrogen metabolism and have treated them by a "purine-free" diet and large amounts of calcium chloride. The results obtained were fairly satisfactory, especially after their procedure was revised to include inhalations of benzyl-benzoate.

Working along the lines as introduced by Dr. Chandler Walker of Boston, that the acute attack of asthma was induced by the inhalation or the ingestion of some protein to which the individual was hypersensitive, they arrived at the following hypothesis: An acute asthmatic attack is, in many cases, caused by a reaction, which although not entirely identical with anaphylatic shock, is still, at least, very similar. Asthmatic cases have increased sensitiveness toward certain material (probably protein). But because most men who live in precisely the same surroundings as the asthmatics are not sensitive, there must be some basic principle present in the constitution of asthmatics. Further, many asthmatics have a strongly increased sensitiveness to tuberculin. It is possible that the same principle that produces this increased reaction to tuberculin, also produces an increased reaction to the "allergy" phenomena. If this is so, it can be attempted to lessen this increased sensitiveness by cautious treatment with tuberculin.

On this hypothesis, they have treated a series of 28 cases with the following results: 18 complete cures; 4 greatly improved, only a chronic bronchitis remaining; 5 cases only slightly improved—three of these showed an occasional attack one a severe bronchitis, the other had a myocarditis with dyspnea. This series was reported about six months ago. At the present time, their total number of cases has reached one hundred and fifty. The results have been practically the same as in the earlier report.

Relative to the method of treatment the following should be noted: Treatment in a hospital is most desirable as here all conditions can be regulated. Rest in bed is of primary importance; purine-free diet. Inhalations of benzyl-benzoate, or benzyl-benzoate per mouth. In case of chronic bronchitis, codeine and potassium iodide. At the first indication of an acute attack, an injection (subcutaneous) of from 2 to 1.00 c.cm. of 1-1000 solution of adrenalin. The tuberculin treatment consists of an injection of 1 c.c. of 1-100,000 solution of tuberculin (T. O. A.) every second day. Patients who show a very weak skin reaction (v. Pirquet) are given daily injections. The intervals between injections are gradually lengthened; the entire course of treatment is about six months long. Patient is allowed to get up on the sixth or seventh day and to leave the hospital after the fourteenth day.

The contra-indication for this treatment is an active pulmonary tuberculosis.

Finally, they have considered the tuberculin treatment of utmost importance in most cases, yet they have used the other methods such as adrenalin, codein and potassium iodide and purine-free diet.

Cases failing to respond to the tuberculin treatment also prove resistant to other forms of treatment, intravenous injections of glucose, etc.—vaccine therapy.

C. K. WILLIAMS.

THE FUNDAMENTAL PRINCIPLES OF AUSCULTATION—E. Rist (Ann. de Med. 10, 317-331, October, 1921—translated by Alano Pierce).

Rist first refers to the work of Boudet and Chaveau and their experiments with a horse suffering from pneumonia. These workers sectioned the trachea and then observed the character of the breath tones over the pathologic and normal lung when the animal was breathing through the tracheotomy wound and when breathing normally.

It was found that the tubular breathing over the consolidated area as well as the bronchial character of the normal breath tone was lost when the air passed through the new opening. If the opening was artificially narrowed a whistling sound analogous to the laryngo-tracheal sound was heard on auscultation and, if the wound was closed, then the bronchial respiratory sound was heard. The vesicular murmur on the contrary persisted without any modification during all the phases of the experiment. It was also found that upon sectioning of the vagi nerves that the vesicular murmur was abolished. This is because the section of the vagi determined the paralysis of the bronchial muscles and hence the abolition of muscular tonus of the little sphincters which make narrow the extremities of the last bronchial ramifications at the entrance to the alveolar sacs.

The author then gives his experience with a patient who had had a tracheotomy and who had tuberculous changes in both upper lobes with cavity formation. On this patient he was able to duplicate the experimental findings of the earlier experimenters.

The conclusions are then that there are two respiratory sounds absolutely different by the nature of the origin and mode of production, namely, the vesicular murmur and the "glottic souffle," the former being produced in the lung parenchyma, the latter produced by the passage of a current of air both inspiratory and expiratory, across the glottis. It is shown, also, that transmission of this latter sound is through the air column.

T. A. PEPPARD.

THE RELATIVE PHOSPHORUS CONTENT OF THE BLOOD WITH SPECIAL REFERENCE TO CANCER—John Vörschutz and Joseph Vörschutz—Deutsches Medizinische Wochenschrift.

This question was first taken up and reported by Gröbly. He has worked out the phosphorus content of the blood in various conditions of health and disease and with special reference to the biological chemistry of can-

cer. As a result of his research, he has established the relative phosphorus content as a basis for the prophylaxis, diagnosis and therapy of malignant tumors. He found that a phosphorus content of more than 1.526 per cent indicated malignancy and that a phosphorus quotient of more than 3.17 was present in cases suspected of being malignant with the exception of carcinoma of the pancreas when the quotient is lower. Vörschutz reports a series of cases diagnosed by this method and verified by clinical methods, biological reaction and *x*-ray findings.

The origin of the phosphorus in the organism can be traced to the nucleo-proteids which are combinations of albumen and nuclein. On splitting up the nuclein molecule, the cleavage products are phosphoric acid, a nuclein base besides other substances such as purin-pyridin, etc. Nuclein, which is an absolute combination of phosphorus and albumen, occurs in every cell, so that any destructive process involving the nuclei acts reflexly on the phosphorus content of the bones and the lecithin of the nervous system. Various investigators have shown that the phosphorus content of bones is increased in case of cancer and decreased in case of tuberculosis. Also the bones show an excess of potassium and a deficiency of sodium in tuberculosis.

Gröbly experiments were based on the theory that the increase in P_2O_5 was in the erythrocytes in spite of the low erythrocyte count. He determined his "P_2O_5 Quotient" on this basis, namely the amount of phosphorus in 10 c.cm. of blood expressed in milligrams, divided by the first two figures of the blood count (i.e. 11:6 mg.—P_2O_5—RBC 2.6 million Q = 11.6/2.6 = 4.5.

The following is a table commutated on his results.

Case No.	Diagnosis	Milligrams of Phosphorus per 100 cc.	Erythrocyte Count	Phosphorus Quotient
1.	No disease	11.8	4,500,000	2.6
2.	Epididymitis	11.8	4,000,000	2.9
3.	Teno-synovitis	11.4	4,200,000	2.7
4.	No disease	11.0	4,000,000	2.7
5.	No disease	11.7	4,300,000	2.9
6.	Lympho-sarcoma ...	12.4	4,100,000	3.02
7.	Ca. of rectum.....	12.9	3,200,000	4.03
8.	Ca. of oesophagus..	9.2	3,600,000	2.6
9.	Puerperalsepsis	8.4	3,200,000	2.7
10.	Erysipelas	7.8	.....	....
11.	Icterus, chronic ...	23.8	3,500,000	6.8
12.	Ca. of uterus.....	12.8	3,600,000	3.55
13.	Sepsis	11.3	4,000,000	2.8
14.	Ca. of intestine....	11.6	2,600,000	4.5
15.	Ca. of uterus.....	11.9	3,200,000	3.7
16.	Ca. of parotid.....	8.8	.....	....
17.	Ca. of colon.....	13.9	4,300,000	3.3
18.	Ca. of stomach.....	11.9	3,200,000	3.7
19.	Icterus	13.9	4,200,000	3.3
20.	Ca. of oesophagus..	9.9	2,900,000	3.4
21.	Icterus	13.7	3,700,000	3.7
22.	Pulmonary tuberculosis	10.6	3,600,000	2.944
23.	Icterus	16.2	4,600,000	3.6

It will be noticed that cases of icterus show an increased P_2O_5 quotient, also that P_2O_5 quotients above 3.17 are very definitely positive of malignancy. In making these tests centrifuged erythrocytes were used in place of the whole blood as has been used formerly by other investigators.

The determination of the phosphorus quotient is of very great importance in the diagnosis of cancer if one excludes the following conditions, icterus, pneumonia and typhoid. Whether this determination will aid in the solving of the cancer problem is purely a theoretical question but it should be of value in the early diagnosis of cancer before the appearance of clinical symptoms and thereby gaining time for the institution of proper treatment.

C. K. Williams.

PNEUMOCOCCAL PERITONITIS—McCarthy & Fraser (British Journal of Surgery, April, 1922).

Pneumococcal peritonitis is a comparatively rare disease, and probably not diagnosed as frequently as it should be.

The cases may be classified into two main groups: The primary cases, which may be acute and chronic, and the secondary cases, the latter not being subdivided, being generally of a subacute character. The primary has formerly been known as the idiopathic type, because the exciting cause was an infection by the pneumococcus with no visceral lesions apparent as the source of the infection.

Many theories have been advanced as to the mode of infection. Rischbieth thought that primary pneumococcic peritonitis was in reality secondary, being always secondary to pneumococcic septicemia. Stoos thought that the infection passed through the wall of the intestinal tract, producing a peritoneal irritation, but it has always been impossible to demonstrate any lesion in the intestinal mucosa permitting of invasion of the wall. Some have also thought that invasion by the lymphatic route was probable by way of the lymphatics about the throat and bronchi, passing thence to the subperitoneal lymphatics, which, of course, is contrary to all the modern conceptions of lymphatic anatomy. The authors believe that the infection is universally by the genital tract in the female in primary cases of pneumococcic peritonitis. This mode of infection would be analogous to the gonococcal peritoneal infection and tuberculous peritonitis from tubal tuberculosis in the female. In their study of 56 cases, the authors never found examples of the primary variety in the male, although only 12 boys were observed. In the 44 females observed, 36 were obviously of the primary pneumococcal type. The rather remarkable feature is the preponderance of the disease in primary cases during the period from the 3rd to the 7th year, particularly in the 5th and 6th years of life. They believe this due to the beginning patency of the female vagina at that time of life, and the alkaline reaction of the vaginal secretion up to the age of 8. The symptoms of the disease in children, as observed by the authors, seemed to point to infection in the genital tract—pain on micturition, frequency of urination, pain in the lower abdomen, and diarrhea probably due to irritation of the pelvic colon. Rischbieth, in the paper previously mentioned, gives his mortality as averaging 88.8 per cent in the collected statistics from the London Hospital. Operation was followed by a mortality of 30 per cent. The authors believe that early operation affords the best prospect for recovery. Early vaginal drainage is in-

stituted, and a transfusion done by the citrate method after a suitable donor has been selected. The transfusion must be done just when the evidences of septicemia are beginning to make their appearance; if done earlier it does not appear to prevent the onset, and if done too late the heart may be so weakened that little beneficial effect can be looked for. They believe that a reduction in the mortality rate in the patients operated on at the Children's Hospital from 65 per cent to 42 per cent, in three years, has been due to the influence of blood transfusions, as advised by the authors. However, it appears to me that the statistics are too meagre to permit an unqualified statement of this kind.

F. J. HIRSCHBOECK.

COMPARATIVE PROGNOSIS IN TUBERCULOUS LESIONS OF THE RIGHT AND LEFT LUNG—Stivelman & Miller (Am. Jour. Med. Sc. July, 1922).

The study is based on an analysis of 1,048 cases from the Montefiore Co. Sanatorium, Bedford Station, New York, and their conclusions are an interesting corollary to the controversy between Brown and others relative to the comparative prognosis of tuberculous lesions in the right or left lung. Their results show that in early tuberculosis the right side is affected twice as frequently as the left, but that as the disease progresses there is a marked increase in the percentage of involvement of the left lung, so that in advanced disease the lungs are numerically equally involved. They believe that predominating left lung lesions run an active course more often than those in the other side of the body, but that in early cases it is immaterial prognostically as to which side is involved.

It has been thought by some writers that the narrow caliber of the left bronchus influences a more rapid progress of the disease when once implanted in this lung. The authors believe that a more rational explanation for this greater gravity in left sided lesions is to be found in the following: Firstly, the fact that the left lung has but one interlobar tissue where the right lung has two, which they believe has a tendency to permit more rapid extension through the lung. The natural barrier afforded by the double layers of serous membrane, being only single on the left side and plural on the right. They also indicate rather half-heartedly, it appears to me, that atelectasis in the left lower lobe partial in extent and due to encroachment by the pericardium and its contents on the left lower lobe, favors the development of tuberculosis. As less likely factors, they consider sinistricardia and the evil influence on the stomach due to contraction by the more or less collapsed pulmonary tissue with diaphragmatic fixation.

J. HIRSCHBOECK.

A CRITICISM OF RECENT INTERPRETATION OF ANNULAR SHADOWS IN LUNG ROENTGENOGRAMS—Burnham and Brown (Am. Review of Tuberculosis, August, 1922).

These authors criticized the localized pneumothorax theory of Sampson, Heise, and Brown and also the theories of Amberson. Their argument is that these shadows can be shown to be produced by cavitation. All autopsies on known cases with annular shadows have been shown to have cavities.

The time utilized in exposing stereoscopic lung plates is said to be, as a rule, much too long, the authors making their exposures in one-fortieth of a second. Plates were taken at right angles to the anterior posterior plane in order to show the exact position of any distinctive shadow. This was done in order to show that lung markings could be superimposed upon an annular shadow which was in fact a cavity.

In three cases it was shown that the area in question presented a perfectly definite opening into a bronchus, this opening being at or near the lowest point of the cavity. Another method which they used to support their conception of the etiology of the shadows was to partially collapse the lung by introduction of air, the absence of pleural adhesions then being demonstrated. a lessening of the size of the cavity, an alteration in its shape and a change in location then took place.

T. A. PEPPARD.

SURGERY

SUPERVISORS:
E. MENDELSSOHN JONES,
LOWRY BLDG., ST. PAUL
VERNE C. HUNT,
MAYO CLINIC, ROCHESTER

THE INTRAMUSCULAR ADMINISTRATION OF SODIUM CITRATE, A NEW METHOD FOR THE CONTROL OF BLEEDING—Harold Neuhof and Samuel Hirshfeld (Ann. of Surg., July, 1922).

Impressed by the fact that patients who received transfusions of citrated blood showed a decrease of clotting-time rather than the reverse, the authors undertook to discover the cause. They found that following intravenous or intramuscular injections of sodium citrate solutions there is a progressive fall in the clotting-time which reaches a peak in about 40 minutes, this peak being sustained for an additional hour. The value then slowly returns to its former value which is reached in 24-48 hours. Thus a 10-minute coagulation time may be reduced to two minutes for a short period.

On intravenous injection, there is no fixed toxic or lethal dose per kilogram of body weight, toxicity depending to a remarkable degree upon the rate of injection of the citrate solution and a toxic or lethal dose is characterized by a swing from the state of shortened coagulation time to one of suspended coagulation (incoagulability of the blood).

Intramuscular injection, although painful, is free from the dangers of toxicity and is the method of choice.

The reduction of clotting-time occurs not only in normal individuals, but also in those in whom there is a pathological increase of the coagulation time, notably in jaundice. It does not occur in blood diseases characterized by blood platelet deficiency as hemophilia and purpura. The dose for intramuscular administration is nine grams for adults. A thirty per cent solution is used, fifteen c.c. into each buttock, preceded by novocaine.

DONALD K. BACON.

MEGASIGMOID, MEGARECTUM, FECAL BOLUS—F. G. Corbin, Mendoza, Argentine Republic. (Surg., Gyn. and Obst., July, 1922.)

Corbin describes a condition which he believes to be far more common in the interior of the Argentine than anywhere else in the world. He has seen some 200 cases in the past thirty years and thinks it to be a clinical entity entirely distant from the congenital megacolon of Hirschsprung. The majority of the cases are 35-50 years of age and the pathology is, in 95 per cent, in the first part of the rectum and the iliac sigmoid immediately above.

These cases show a marked dilatation of the sigmoid and rectum with hypertrophy of all coats of the intestinal wall which may be as thick as one centimeter. Within is a hard fecal mass somewhat the shape of a football, which may be as large as 50 cm. in circumference and weigh 600-700 gm. This mass can be felt through the abdominal wall and frequently gravitates to the mid-line or over to the right iliac fossa. As a rule the patient furnishes the diagnosis which is confirmed by recto-abdominal examination. At times, however, the condition is not suspected and it may even be accompanied by a diarrhea of fluid material which passes between the mass and the gut wall.

For treatment, various measures may be resorted to. In many instances the impaction can be removed per rectum by the finger or a spoon. At times it can be crushed through a lax abdominal wall and removed with enemata or cathartics. The accumulation may defy these tactics and necessitate laparotomy. It can then frequently be crushed through the unopened gut wall and pulverized for passage per rectum. As a last resort the gut may be incised and the tumor removed intact.

Patients suffering from this condition are markedly toxic with earthy-colored skin, subnormal temperature and become markedly emaciated.

After the rectum is emptied the general condition improves, but the local condition shows no tendency toward a spontaneous cure and recurrences are frequent. Corbin has attempted a plication operation based on Moynihan's gastroplication with fair success.

Corbin thinks the condition results from constipation and chronic sigmoidal stasis in an originally normal gut and may take years to fully develop. In a few cases at Perthes peritoneal fold between the first and second portions of the rectum may contribute to the stasis.

DONALD K. BACON.

TRAUMATIC ASPHYXIA—T. M. Green (Surg., Gyn., Obst., August, 1922).

This condition is brought about by compression of the chest and abdomen over an extended period of time, causing a suspension of the respiratory function.

The reported cases exhibited certain striking and more or less constant characteristics, i.e., the appearance of the skin, head, face and neck, differing only in degree. The color of the skin becomes a dark red to purple, and the discoloration may be discrete or confluent, covering the face and neck, extending sometimes down as far as the third rib on the chest. On the back the discoloration may cover the area of the trapezius muscles. Subconjunctival hemorrhages are common to all cases, while hemorrhages from the nose, mouth, and ears frequently occur. Punctuate ecchymoses on the pleura, pericardium and abdominal viscera are common. Pulmonary engorgement, râles and bloody expectoration may be present.

The condition is explained by lack of competent valves in the veins of the head. Sections of skin removed for study show that there is no extravasation of blood from the vessels, but that intense distention and engorgement occurs within the vessels, perhaps from vasomotor paralysis.

Treatment consists in the use of stimulants, application of oxygen and artificial respiration. Most cases that recover consciousness from the original injury go on to complete recovery. "Contusion pneumonia" may occur about the third day. Optic nerve atrophy and opaque patches in the macula have been reported.

Several excellent illustrations accompany the article.

DONALD K. BACON.

A NEW SIGN IN THE DIAGNOSIS OF URETERAL STONES—Bransford Lewis (Jour. of Urology, June, 1922).

Lewis discourses on the methods now employed and those used in the past to distinguish ureteral calculi from other calcified bodies which may be found in the same vicinity. The Roentgen ray unaided will demonstrate a stone but gives no very conclusive evidence as to its location inside or outside the ureter. If an opaque ureteral catheter be introduced through a cystoscope a urinary calculus will be shown in contact with it. At times a phlebolith shadow may be superimposed on that of the catheter giving a very similar appearance. Kretschmer and others have sought to avoid this difficulty by making a double exposure on a single plate with a shift of several inches in the position of the tube between exposures. This procedure solves the problem in many instances by showing an interval between stone and catheter in one or other of the exposures. There still remains a small group of cases in which an extra-urinary stone situated very close to the ureter cannot be identified as such. Lewis surmounts the difficulty by inserting a stiff metal ureteral dilator into the ureter. This instrument does not adapt itself to the curve of the ureter but causes the ureter to conform to the shape in which it has previously been bent thereby straightening it and moving it over a distance of a centimeter or more. At the same time the shadow will be removed from that of any extraurinary stone which may have previously covered it.

DONALD K. BACON.

STREPTOCOCCUS SCROTAL AND PENILE GANGRENE—M. F. Campbell (Surg., Gyn. and Obst., June, 1922).

Campbell reports five cases of acute, fulminating gangrene of the skin of the penis and scrotum. Streptococci were found in large numbers in all these cases. The condition resembles erysipelas in many respects and frequently begins abruptly with rapid tumefaction of the parts, which later become red and glazed, then brownish and later gangrenous. In this stage evidence of severe toxemia, chills, fever, vomiting and delirium may be present. On incision, the condition is found limited to the skin and subcutaneous tissue with much edematous exudate, widespread thrombosis of the vessels and at times

pus pockets as far forward as the abdominal wall or as far back as the ischiorectal fossæ.

The condition must be distinguished from urinary extravasation, periurethral abscess and the passive edema due to nephritis, cardiac insufficiency, hepatic cirrhosis, Asiatic cholera, smallpox, chronic alcholism, diabetes, etc.

Treatment should include free incision and drainage with excision of gangrenous tissue. Hot fomentations of 1:500 potassium permanganate may be used both as disinfectant and deodorant. When sufficient recovery from operation has taken place the patient is given a daily hot tub bath for one hour. After subsidence of the infection, the skin of the parts regenerates with surprising rapidity. If necessary, plastic repair may be resorted to after an interval.

A mortality of 20 to 25 per cent may be expected in this condition.

DONALD K. BACON.

PEDIATRICS

SUPERVISORS:
FREDERICK C. RODDA,
CHILDREN'S CLINIC, MINNEAPOLIS
ROY N. ANDREWS,
MANKATO CLINIC, MANKATO

ORAL DISORDERS IN PEDIATRICS—Samuel A. Cohen (Amer. Jour. of Dis. of Children, Aug., 1922).

The responsibility of oral diseases must rest on the physician rather than on the dentist, because the opportunity of detecting and preventing potential disturbances comes to him whose contact with the patient commences early and continues with more or less frequency. This is particularly true of the pediatrician, who sees many of the cases shortly after birth and assumes the care of the general condition thereafter. Dr. Percy Howe's animal experiments have shown that lack of proper diet has some bearing on dental ailments, particularly when the teeth begin to loosen. It is thought that the loosening of the teeth may be the result of a drain by the fetus on the maternal supply of phosphorus and calcium. If this supply is not furnished through the diet of the mother, it is natural to assume that the unborn child will suffer, since the mother is required to contribute the necessary elements for the bone and teeth formation.

Formation of Teeth.—Preparation for tooth formation takes place as early as the sixth week in utero, and between the seventh and eighth week, the dental band or ridge is formed. The mother should have a well balanced diet, giving special attention to those foods which contain mineral salts and vitamins. The enamel begins to form on the deciduous teeth about the 17th week in utero. The toxemia of the mother indirectly effects the development of the child. Hence it is important to remove all sources if possible. Continued anorexia leads to defective formation of the teeth in utero. Dental decay is an important cause of toxemia in pregnant mothers. Pregnancy should be no barrier to dental treatment.

Such defects as chalky appearance of the enamel, pitting, transverse bands on the surface, brown staining of the enamel, irregular and serrated edges are the results of constitutional diseases and malnutrition.

Dentition.—There is altogether too great a tendency to disregard the diagnosis of dentition. It should proceed without any disturbances, but unfortunately, clinical evidence does not always support this view. The symptoms will vary; such as temperature, disturbed sleep, gastrointestinal disturbances (particularly diarrhea), increased salivation and disturbance of weight curve. Convulsions are not uncommon. The gums are often tender, either red or white in color. Otitis media and bronchitis are frequent complications. These symptoms promptly disappear after the cause is removed.

Hygiene of the Mouth.—The epithelium of the infant's mouth is very sensitive to trauma. It has been repeatedly demonstrated that infants who do not receive any mouth cleaning before the eruption of the first tooth show a healthy epithelium and do not suffer from the various forms of stomatitis. A toothless mouth requires no cleansing.

At a clinic held during the A. M. A. in 1921, 176 immigrant children of all ages, all of whom had been in this country less than four weeks, were shown. Almost all nationalities were included. Virtually none of the children had ever seen a toothbrush. Thirty per cent had perfect mouths. In contrast to this, an equal number of children about the same ages, all born in this country, were presented. In this group, a perfect mouth was the exception. A few of the mouths were beyond repair. It has been estimated that 90 per cent of children in the public schools are in need of treatment for carious teeth. The best authorities say that any harm that may possibly result from the extraction of carious teeth is negligible, in comparison to the harm resulting from the failure to extract. No child is too young for treatment. Howe has demonstrated that caries can be prevented and arrested by diet alone. By feeding animals with a diet deficient in vitamins, caries and decay readily follow. Vitamins themselves do no apparent good if there is an insufficient amount of calcium in the food.

Wallace has reported favorable results in children by giving a diet containing hard foods. The more salivary secretion obtained, the better for the food and for the teeth. Acids and highly flavored foods increase the saliva in quantity and in ptyalin content. Dry bread is especially good. Almost all vegetables, cooked or raw, and all fruits stimulate the flow. Moreover, the flow continues for some time after the food is swallowed. It is highly probable that saliva contains a substance or substances to prevent either the onset or the progress of caries. It is interesting to note that saliva of mouths having good teeth has a higher percentage of calcium than mouths which have caries. Foods that are known to be poor salivary stimulants include farinaceous foods, fine white bread, coffee, and particularly sugar and sugar-containing foods.

R. N. ANDREWS.

NEWER ASPECTS OF THE RICKETS PROBLEM—Alfred F. Hess (Jour. A. M. A., April 22, 1922).

Hess points out that the etiology of rickets has been based almost entirely upon hypotheses or general impressions of errors in diet or hygiene, faulty metabolism, inactivity of the endocrine glands, and bacterial invasion, but that during the last few years there has been a new epoch in the history of rickets, due to the increased interest in nutrition, vitamins and the so-called deficiency disorders. Standard diets have been devised which regularly lead to rickets in rats, but which, by simple additions, serve to afford protection. The use of Roentgen rays has also been an advance. Rickets can be prevented or cured by means of light rays—either artificial or sunlight. In Hess's experiments an effort was made to correlate clinical and laboratory observations. It should be borne in mind that the majority of cases are latent and not discernible by diagnostic methods. One of the central points of interest at present is whether the fat-soluble vitamin should be regarded as the antirachitic vitamin. As cod-liver oil is the most potent antirachitic substance it may be stated that the two factors are identical. The fat-soluble vitamin, however, does not play the dominant rôle. Rickets can be brought about by a diet adequate in calcium but deficient in phosphorus. But the very fact that woman's milk contains only about one-fifth as much phosphorus as cow's milk, and that rickets is of far less frequent occurrence among nursing than among bottle-fed infants, indicates that the phosphorus intake does not play the deciding rôle. Animal experiments have emphasized the fact that the requirement of phosphorus (and probably calcium) bears a direct and important relationship not only to body weight and to age but also to rate of growth.

Today the influence of hygiene in the etiology of rickets is firmly established and is identified largely with an adequate supply of sunlight. One must bear in mind the marked incidence of rickets in winter and in spring, and its comparative rarity in the summer. There is no doubt that it is not only a hygienic, but also a dietetic disorder. There are at least 2 other determinants which play a rôle in relation to light—rate of growth and pigmentation of the skin. The atrophic infant, notably insusceptible to rickets, has a far lower requirement for the active light rays than the rapidly growing infant. Colored infants require a greater degree of the effective light rays than do white infants and he believes that the amount of pigmentation of the skin is the determining factor in the absorption of the light rays.

E. F. Robb.

THE ETIOLOGY OF RICKETS, EARLY AND LATE—H. S. Hutchinson and S. J. Shah (Quart. Jour. Med., Oxford, Jan., 1922).

These studies were made in India, in 1920-1921. Two groups are contrasted: The fairly well-to-do were able to secure a much larger amount of milk and butter than the poorer second group, who subsisted on a diet poor in fats and excessive in carbohydrates, and in the case of whom anemia and scurvy were common. Nevertheless, in the first class rickets was found to be more frequent; in the case of well-to-do Hindus and Mohammedans the percentages of rickets were 38.2 and 28.5 respectively; in that of poorer Hindus the percentage of rickets was 6.4.

The reason for this difference lies in the social and economic conditions, and particularly in the custom which keeps the women of the higher stratum, and therefore their young infants, in strict seclusion in houses which are small, dark and ill-ventilated. On the other hand, the poorer classes, men and women together, must labor in the open, taking their children with them, which indicates that the most important etiologic factor in rickets is lack of fresh air, sunlight and exercise. The wealthier classes consume a much greater amount of fat-soluble vitamin, deficiency of which is therefore excluded as the principal cause of rickets.

As to the treatment—all cases treated have yielded to a course of fresh air and exercise, all other factors remaining constant and no medicine being given. Seventeen cases of late rickets are reported, all in females and all but one in the classes observing "purdah"; all these cases began between the ages of 12 and 13 years, when this system of seclusion was imposed. Only one case of late rickets was found among the poor who eat a diet poor in fat-soluble vitamin but who take plenty of fresh air.

E. F. Robb.

A CLINICAL REPORT OF SIMPLE METHODS IN THE CARE OF PREMATURE BABIES—Walter Lester Carr (Arch. of Ped., July, 1922).

The more premature a baby the more feeble the digestion. Metabolic processes are slower than in a full-term infant and loss of heat is relatively greater. Tolerance for sugar is greater than for fats and proteids. Breast milk should be given if it can be obtained; it should be drawn from the mother or wet nurse, diluted with equal parts of 5 per cent milk sugar solution and fed with a medicine dropper or a Breck feeder. The lower the body temperature the more essential it is that sugar should be added. Premature babies do not bear a high fat and this may give trouble even with mother's milk. If cow's milk is given, it should be boiled and diluted as ordered. Water should be administered freely. Feeding intervals should be about two hours apart and the quantity should not exceed one to two drams at each feeding for the first few days but the feedings must be watched and the amount gradually increased.

Although these babies require a careful food adjustment, their need for the first days after birth is for fluid and this may be supplied in part by sterile water or by a five or six per cent milk sugar solution. Success in management comes largely by reason of a nurse's care and of her understanding of the symptoms of low vitality rather than by forcing of a large amount of food.

Cane sugar is given to babies who have a persistent low temperature and it apparently helps heat production. Lavage and gavage are helpful for babies who take their food slowly and for those who regurgitate. Lavage will lessen and perhaps prevent regurgitation by increasing stomach motility. It is essential to realize that the caloric requirements are high, from 120 to 160 calories per kilogram. The writer routinely keeps babies in the incubator until their weight approximates five pounds but

this is not always possible. As the temperature approaches normal, the babies are taken from the incubators and kept in the nursery, but are replaced in the incubator part of the day.

Premature babies are prone to be rachitic and this should be borne in mind for their later diet.

Finally, the problem of premature babies depends a great deal upon the details of care and nursing. If mother's milk can be obtained, the outlook is much brighter.

R. N. ANDREWS.

THE CLINICAL VALUE OF INTRAPERITONEAL INJECTIONS OF SALT SOLUTION—J. Claxton Gittings and John D. Donnelly (Arch. of Ped., July, 1921). The authors state that in the treatment of dehydration seen so frequently in children suffering from gastrointestinal disorders with diarrhea during the summer months they had found that the most efficacious means of introducing fluid was by the nasal tube, or by intraperitoneal injections. The older methods were either too painful or allowed the introduction of insufficient amounts of water. The intravenous route possesses certain dangers and might well be reserved for other solutions. The nasal tube was found preferable to the stomach tube, because of less danger in causing vomiting. The tube should be only introduced well beyond the epiglottis and not passed through the cardia. This method causes less regurgitation. From 150 to 250 c.c. of water can be introduced two or three times in twenty-four hours. Intraperitoneal injections seem to be safe provided the bladder is empty, and the fluid introduced slowly. The amount injected varies from 150 to 300 c.c. Disturbance of respiration and pulse indicate prompt withdrawal of the needle. Dehydration was determined upon the degree of the loss of resiliency in the skin and subcutaneous tissues when pinched into a fold.

Autopsy upon nine of the patients injected showed that no injury had been done to the peritoneum or any of the abdominal structures. 300 c.c. probably represents a maximum for intraperitoneal injections in infants under one year of age and smaller amounts administered more frequently were safer for infants weighing less than 4,000 grams.

R. N. ANDREWS.

COLIC IN BREAST-FED INFANTS AS A RESULT OF SENSITIZATION TO FOODS IN THE MOTHER'S DIETARY—W. Ray Shannon (Arch. of Ped., December, 1921). For some time it has been held that the diet of the mother could not affect a breast-fed infant. Shannon, in a previous paper, has shown, however, that food taken by the mother may appear in the breast milk and give rise to ana-phylactic reactions in the infants. These reactions may affect the skin, respiratory or the gastro-intestinal system.

He cites six cases of colic in infants due to such reactions. In each case skin tests were done on the infant with foods from the mother's dietary and positive results obtained. The removal of the offending foods caused the disappearance of the colic. In each of these cases egg was one of the foods which caused the trouble; it is noted that egg protein has been responsible for some of the manifestations of exudative diathesis in artificially-fed children.

It is concluded that the food allergy demonstrated in these cases is a reasonable basis for explanation of the old statement, "that all breast milk is not the best food for every baby."

A. M. SNELL.

EVIDENCE OF PANCREATIC DISORDER IN RICKETS—E. C. Dodds (Brit. Med. Jour., London, April 1, 1922).

Observers have found that the production of rickets is associated with diet. In this communication the importance of fats and carbohydrates is considered, and new conclusions are drawn. As a result of the examination of cases of acute rickets in children, distinct evidence was found of pancreatic disorder, as determined by an increase in urinary diastase, and in fecal fat content. An increase of urinary diastase was demonstrated, the average in 17 cases was 154; the diastatic power decreased to normal during convalescence. Increased fat in the feces was revealed by a mean of 75 per cent, as compared with 20 per cent for nonrachitic children. From these observations it is suggested that there is a pancreatic lesion in rickets. The large amount of unsplit fat in the feces indicates that it must be associated with reduced secretion of pancreatic fluid. A possible explanation of the bearing of this lesion on the disease is given, i. e., that there is a poor production of fatty acids, and consequently a poor absorption of calcium. The theory is being tested by observation of the effect of fatty acids on calcium absorption, in both rachitic and normal children. Experiments are still in too early a stage to warrant a definite statement. Deficiency of pancreatic secretion suggests a new line of treatment—that of giving a pancreatic extract which contains lipase. Cases are now being treated with this extract, in the hope it will digest fats in the intestine, and thereby produce an adequate amount of free fatty acids for the absorption of calcium. The writer believes that this pancreatic lesion is the result of an intoxication, probably bacterial in origin.

ROOD TAYLOR.

GYNECOLOGY AND OBSTETRICS

SUPERVISORS:
ARCHIBALD L. McDONALD,
FIDELITY BLDG., DULUTH
ALBERT G. SCHULZE,
LOWRY BLDG., ST. PAUL

THE TREATMENT OF GONOCOCCAL INFECTION IN THE LOWER GENITAL TRACT OF FEMALE INFANTS AND YOUNG GIRLS—Charles C. Norris, and Henry B. Mikelberg (Arch. of Ped., May, 1922). In the adult there is a definite percentage of cases in which the infection spreads from the cervix to the body of the uterus and hence to the tubes, ovaries and pelvic peritoneum. This upward invasion nearly always occurs at a menstrual period, or after the emptying of a pregnant

uterus. As the child neither menstruates nor becomes pregnant, pelvic inflammatory disease is of extremely rare occurrence.

The chief clinical characteristics of gonococcal vulvovaginitis in the young is its chronicity, its resistance to treatment and its tendency to recur after apparent cure. We have observed many cases that would ordinarily have been pronounced cured, in which the cystoscope revealed a small, unhealed lesion. The cervix, urethra, and, in a lesser proportion of cases, the Bartholin's glands are the harboring places for the gonococcus.

Technic of Treatment. The child is placed on the back with the hips well elevated and the thighs spread widely apart. The external genitalia are cleansed with cotton moistened with a 1 per cent Dakin's solution. The solution is injected into the vagina somewhat slowly, after which the instrument is withdrawn and the labia held together for two minutes.

Intensive treatment of the urethra and cervix is generally necessary during the end stages of the disease, and for this purpose mercurochrome has usually been employed. Dakin's solution does not keep well and if it shows any cloudiness should be discarded. The average period required to obtain a cure was 12 weeks, though some cases were much more resistant. In cases, resistant to the treatment, the vagina is thoroughly cleansed with 1 to 10,000 potassium permanganate solution. This should be done under good illumination, and the vagina dried with cotton, followed by hot air. Thorough drying is essential.

As a final step the entire vagina and external parts are painted with a 1 or 2 per cent mercurochrome solution. The reason for the susceptibility of the vulva and vagina is due to the immaturity of the squamous epithelium forming its lining. The disease nearly always undergoes spontaneous cure prior to puberty, probably in a large measure due to the development of the tissues which occur at that time. This treatment is employed three times a week, and in the intervals the mother applies mercurochrome twice daily.

The more we see of gonorrhea in both the child and the adult the more are we impressed with the fact that the problem is not so much the choice of the gonocide, as is the thoroughness and regularity of treatment in this class of cases.

R. N. Andrews.

A PATHOGNOMONIC SIGN OF INTRA-UTERINE DEATH—Alfred Baker Spaulding (Surg., Gyn. and Obst., June, 1922).

Eliciting crepitation of the fetal head bones by vaginal or abdominal palpation is practically the only positive diagnostic sign of intra-uterine death. Spaulding makes use of the *x*-ray as an aid in the diagnosis of this condition. Very soon after the death of the fetus in utero, the brain tissues shrink, allowing the skull bones to overlap, thus producing a disproportion between skull surface and skull contents. In a live baby, overlapping may be caused by molding but there is no shrinking of the brain tissues, so that the relation between the surface and contents of the skull remains unaltered. He studied 31 cases of pregnancy. In three of these, symptoms, such as decrease in size of abdomen, absent fetal heart tones, etc., led to the probable diagnosis of death of the fetus. *X*-ray pictures were taken, and in all three there was overlapping of the skull bones and shrinking of the cavity of the skull. Diagnosis of intra-uterine death were made in all three and dead babies delivered. In all living babies there was no overlapping, except during labor, and then there was no demonstrable shrinking of the cranial cavity.

F. C. Greaves.

UTERINE HEMORRHAGE OF ENDOCRINOPATHIC ORIGIN—Samuel H. Geist (Surg., Gyn. & Ob., June, 1922).

The process of menstruation is dependent upon, not only the mere presence of uterus and ovaries, but also the proper stimulus from some other source. This stimulus is hypothetically accepted as coming from the ductless glands. While there seems to be no one definite gland responsible in elaborating the stimulus, the presence of functionating ovaries is absolutely essential. The glands of internal secretion form a chain and to have normal menstruation the various links in the chain must be flawless. Geist divides abnormal uterine hemorrhage into the effects of systemic, and local manifestations. The systemic conditions are: Cardiac, renal, hepatic, blood diseases, and infections such as scarlet fever. The local conditions are: Local inflammation, malposition, displacements, foreign bodies, tumors and lastly conditions in which no gross lesion is demonstrable. Bleeding due to tumors is divided into two types: those that by erosion of the tumor itself cause hemorrhage, or by pressure cause a vessel in the mucosa of the uterus to be opened; and, second, tumors that are not friable, not exposed to trauma and do not erode the mucous membrane. Under this last group he classifies fibroids. Out of 250 cases of fibroids 192 had a history of a typical bleeding irrespective of size or location. 58 gave a history of no bleeding and were identical in size and location with some of those that did bleed. This fact, Geist thinks, eliminates mechanical factors from consideration. He also studied the 192 cases histologically, and found that in 162 of them there was a marked hypertrophy of the mucosa that bore no relationship to the phase of the menstrual cycle. This was the only constant lesion found and he advances the theory that the cause of the hemorrhage lies in the disturbance of the endocrine balance. Since removal of the ovaries or raying them well causes a cessation of mucosal hypertrophy and hemorrhage, he concludes that local conditions, unless necrosis or ulceration supervene, are due to endocrine disturbance. Likewise the hemorrhage associated with ovarian tumors is thought to be due to the same cause.

In cases of essential uterine hemorrhage the constant findings of hypertrophied mucosa, edema of the stroma, large tortuous vessels, and cystic glands irrespective of the menstrual phase leads him to the theory that the cause lies with the endocrine change and that the fault lies primarily with the ovaries. He suggests the possibility of the mucous membrane of the uterus itself having an internal secretory function but maintains that as yet little is known concerning either its activities or even of its presence.

F. C. Greaves.

BOOK REVIEWS

BOOKS RECEIVED FOR REVIEW

PRINCIPLES AND PRACTICE OF *X*-RAY TECHNIC FOR DIAGNOSIS. John A. Metzger, M. D., Roentgenologist to School for Graduates of Medicine, Medical Department, University of California, Southern Division, Los Angeles. 144 pages. 61 illus. St. Louis. C. V. Mosby Co. 1922. Cloth. $2.75.

DISEASES OF THE SKIN. Henry H. Hazen, A. B., M. D., Prof. of Dermatology in the Medical Department of Georgetown University; Professor of Dermatology in Medical Department of Howard University; Sometime Assistant in Dermatology in Johns Hopkins University; Member of the American Dermatological Association. 2nd edition. 608 pages. 241 illus. with 2-color plates. St. Louis. C. V. Mosby Co. 1922. Cloth. $7.50.

OBSTETRICAL NURSING. By Carolyn Conant Van Blarcom, R. N., Formerly Assistant Superintendent and Instructor in Obstetrical Nursing and the Care of Infants and Children at the Johns Hopkins Hospital Training School for Nurses. Author of "The Midwife in England." With Two Hundred Illustrations and Eight Charts. The MacMillan Company, Publishers. Price, $3.00.

The appearance of a book of this type gives real satisfaction to one who is interested in obstetrics or is concerned with the instruction of nurses. It is prepared by an authority thoroughly qualified by years of experience and close contact with the problem from the double standpoint of superintendent in charge of obstetrics and instructor of nurses. The arrangement is orderly. The subjects are presented in good sequence, including anatomy and physiology, normal and pathological conditions. The scope is comprehensive and includes not only excellent theory of various normal processes, but the deviations met in practice. The teaching is orthodox and is presented in a manner easily appreciated by any intelligent student nurse. The aims and objects of various therapeutic measures are simply but accurately explained with ample allowance for special methods of practice of individual obstetricians. The details of special nursing methods are amply discussed but do not duplicate material, commonly found in the ordinary nursing manual.

There is respect for variation in practice in different institutions. On the basis of this book a student nurse should be able to work out an adequate technique for meeting any situation in her work. The style is pleasing and easy. The attitude of the author serves to inspire her students with a high regard for the work. Emphasis is constantly maintained to uphold the idea that the nurse, in order to really succeed in obstetrical work, must bring to it much more than technical skill. Throughout the author presents her material in a manner excellently calculated to inspire what may be termed a high moral tone to the entire subject. The new ideas of pre-natal care, maternal welfare, and public obstetrical clinics, are all discussed. The illustrations are excellent and well selected to demonstrate the anatomical relations and technical methods. The absence of face masks in the illustrations showing normal labor will be noted with surprise by some obstetricians. Prolapse of the cord is discussed on Page 285, but in this connection the author gives no sign by which the nurse will be able to detect fetal distress which will be evident before the prolapsed cord is visible at the vulva.

ARCHIBALD L. MCDONALD.

THE WRITING OF MEDICAL PAPERS. Maud H. Mellish, Editor of the Mayo Clinic Publications, Rochester, Minnesota. 157 pages. Philadelphia: W. B. Saunders Co., 1922. Price $1.50.

This small and concisely written book is a veritable godsend to the profession and more particularly to authors of medical papers, proof-readers and editors. While its author may be accused of being too arbitrary in her statements, rules of punctuation, spelling and form are largely the results of good usage and we know of no one in a better position to postulate what good form is.

To anyone about to write a medical paper, we strongly recommend the reading and rereading of this short book and then placing it with his dictionary for frequent reference. Certain chapters while dwelling on dry subjects are, because of the author's characteristic dry wit, very entertaining; the reader is warned, however, that much of the book is full of meat and should be taken in small amounts to avoid intellectual confusion.

C. B. DRAKE.

LOCATIONS

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There is an opening for a physician at St. Hilaire, Minn., as the local physician is leaving. Address A. F. Hall, Farmers State Bank, St. Hilaire, Minn.